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ARTICULATION BETWEEN 2-YEAR AND 4-YEAR COLLEGES.
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CONTINUATION OF A LARGE-SCALE INVESTIGATION (ED 003 047) OF THE PERFORMANCE OF STUDENTS WHO TRANSFERRED FROM 2-YEAR TO 4-YEAR COLLEGES AND UNIVERSITIES PROVIDED MORE INTENSIVE ANALYSIS OF (1) THE ACADEMIC RECORDS OF THE TRANSFER STUDENTS, (2) THE FACTORS RELATED TO THEIR SUCCESS OR FAILURE, (3) THE PROBLEMS OF ARTICULATION BETWEEN 2- AND 4-YEAR INSTITUTIONS, AND (4) COMPARATIVE PERFORMANCE BETWEEN TRANSFER AND "NATIVE" STUDENTS. STUDIES INVOLVED APPROXIMATELY 7,000 JUNIOR COLLEGE STUDENTS WHO TRANSFERRED TO FORTY-ONE 4-YEAR COLLEGES AND UNIVERSITIES IN 10 STATES. THE MAJOR FINDINGS WERE SUMMARIZED IN FIVE AREAS--(1) STUDENT OUTCOMES 3 YEARS AFTER TRANSFER, (2) SOURCES OF VARIANCE IN PERFORMANCE, (3) PITFALLS FOR TRANSFER STUDENTS, (4) USEFULNESS OF TEST RESULTS AS EXPLANATORY FACTORS, AND (5) POLICIES, PRACTICES, AND PROGRAMS DURING 1964. SUGGESTIONS WERE OFFERED FOR IMPROVING THE ADMISSION, ORIENTATION, AND COUNSELING OF STUDENTS FROM JUNIOR COLLEGES. (JM)

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Articulation Between Two-Year and Four-Year Colleges

Cooperative Research Project No. 2167

Dorothy M. Knoell
and
Leland L. Medsker

CENTER FOR THE STUDY
OF HIGHER EDUCATION

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UNIVERSITY OF CALIFORNIA
Berkeley, California
1964

The research reported herein was supported through the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare.

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FOREWORD

The study reported here is a continuation of a large scale investigation of the performance of students who transferred from two-year to four-year colleges and universities.[1] It is a more intensive analysis of the academic records of the transfer students, of the factors related to success or failure, and of the problems of articulation between two- and four-year institutions. It also includes a comparison of the performance of transfer and "native" students, and offers suggestions for improving the admission, orientation, and counseling of students from junior colleges.

The present report and its forerunner have many implications of significance to both the "sending" and the "receiving" institutions. Because it is apparent that two-year institutions of various types will absorb an increasing percentage of students who continue their education beyond the high school, the implications are relevant to the whole program of higher education in the United States.

It is fortunate, therefore, that the Esso Foundation, late in 1964, made a grant to support a series of state and regional conferences at which the results of the two studies and the implications of the findings will be discussed by representatives of two- and four-year colleges. During the spring and summer of 1965 a conference will be held in each of the states which participated in the study. The Esso grant was made directly to the American Association of Junior Colleges. Representatives from this Association, together with those from the Association of American Colleges and the American Association of Collegiate Registrars and Admissions Officers, are serving as advisors in the planning and organization of the conferences.

T. R. McConnell, Chairman
Center for the Study of Higher Education
University of California
Berkeley, California

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[1] Knoell, D. M., and Medsker, L. L., Factors Affecting Performance of Transfer Students from Two- to Four-Year Colleges, Center for the Study of Higher Education, University of California, Berkeley, 1964.

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A few of the many persons at the Center to whom a particular debt is owed are T. R. McConnell, its Chairman; Mrs. Adelaide Vawter, Administrative Assistant; William Raley and his staff in data processing; Mrs. Katherine Jako, Mrs. Ingeborg Murphy, and, finally, Mrs. Marilyn Hillesland, who served both as principal research assistant during the final phase of the project and as typist for the completed report.

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CONTENTS

Page

Foreword iii

Acknowledgements iv

List of Tables vi

Chapter 1. Background of the Study 1

Chapter 2. Third-Year Follow-Up of the Transfer Students 9

Chapter 3. Selected Analyses of the Performance of Non-Graduates 26

Chapter 4. Academic Ability of the Transfer Students 33

Chapter 5. Comparisons of Native and Transfer Students on the Basis of Entrance Test Scores 51

Chapter 6. Current Policies and Practices Affecting Transfer Students 75

Chapter 7. Findings and Conclusions 91

Appendix Analysis of Variance Tests of the Significance of Differences in Grade-Point Averages Earned by Students Who Transferred after Varying Amounts of Work in the Junior College 112

LIST OF TABLES

Table Page

1 Numbers and Types of Students in the Four-Year Colleges and Universities Which Participated in the Transfer Student Study 3

2 Academic Status of Students Three Years after Transfer to Four-Year Colleges, by Type of Four-Year College
  A. Major State Universities (Type 1) 10
  B. Teachers Colleges (Type 2) 10
  C. Other State Universities (Type 3) 11
  D. Private Universities (Type 4) and Technical Institutions (Type 5) 11

3 Summary of the Academic Status of Students Three Years after Transfer to Four-Year Colleges, by Type of Four-Year College 12

4 Percentages of 1963 Graduates in Continuous Attendance Who Required Various Numbers of Terms after Transfer in Order to Complete Graduation Requirements by Class Level at Time of Transfer 14

5 Enrollment Status of Junior College Transfer Students Three Years after Transfer, by Type of College to Which They Transferred and Class Standing at Time of Transfer 17

6 Mean Grade-Point Averages Earned in Junior College and after Transfer by Students Who Were Admitted with Varying Class Standing, by Enrollment Status Two Years after Transfer and Type of Four-Year College 19

7 Percentage Distributions of the Major Fields of the Transfer Students at Entrance and Among the Graduates, by Type of Four-Year College 21

8 Summary of the Findings Concerning the Relationship Between Test Performance and Success after Transfer 36

9 Mean Scholastic Aptitude Test Scores and Standard Deviations Earned by Transfer Students to State University A-B, by Enrollment Status Two Years after Transfer. . 38
  A. Campus A
  B. Campus B

10 Median Verbal Scores Earned on the Scholastic Aptitude Test by Various Sub-Groups of Transfer Students to State University A-B 39

11 Mean Scholastic Aptitude Test Scores and Standard Deviations Earned by Transfer Students to Major State University C, by Status Two Years after Transfer 40

12 Mean and Median Scholastic Aptitude Test Scores Earned by Male Transfer Students to State University C, by Major 41

13 Mean Scores and Standard Deviations Earned on a Twelfth-Grade Test Battery by Transfer Students to Two Public Universities (D and E) by Enrollment Status Two Years after Transfer 43
  A. Major State University D
  B. Other State University E

14 Mean Total Scores Earned on a Twelfth-Grade Battery by Students with Various Majors Who Transferred to State Universities D and E 44

15 Mean Test Scores and Standard Deviations Earned by Transfer Students to Major State University F, by Status Two Years after Transfer 45

16 Mean Test Scores and Standard Deviations Earned by Transfer Students to Major State University G, by Status Two Years after Transfer 47

Table Page

17 Mean Test Scores and Standard Deviations Earned by Transfer Students to State University H, by Status Two Years after Transfer 48

18 Mean Test and Standard Deviations Earned by Transfer Students to Teachers College J, by Status Two Years after Transfer 49

19 Mean Test Scores and Standard Deviations Earned by Transfer Students to Technical Institution K, by Status Two Years after Transfer 50

20 Summary of Findings Relating to Test Performance of Native and Transfer Students Who Graduated in 1962 54

21 Mean Grade-Point Averages Earned by High Ability Students in the Samples of Native and Transfer Students in Seven State Universities 57

22 Scholastic Aptitude Test Mean Scores, Standard Deviations, and Results of t-Tests of Difference in Means for Samples of Native and Transfer Students at Major State University A 58

23 Scholastic Aptitude Test Mean Scores, Standard Deviations, and Results of t-Tests of Difference in Means of Native and Transfer Graduates from Major State University C 61

24 Twelfth Grade Mean Test Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Two State Universities Located in a Single State 63
A. State University D
B. State University E

25 Freshman Admission Test Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Major State University F 65

26 Distributions of Stanine Scores on the ACE and SCAT Aptitude Examinations Earned by Samples of Native and Transfer Graduates from Major State University G 67

27 Placement Test Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Major State University G 68

28 Mean Placement Test Scores and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates at the Time of Their Admission to State University H 70

29 Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Teachers College J on Aptitude and Reading Tests 72

30 Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Technical Institution K on the Scholastic Aptitude Test 73

CHAPTER 1

BACKGROUND OF THE STUDY

Early in 1961 a longitudinal study of transfer students from junior colleges was undertaken at the Center for the Study of Higher Education under a Cooperative Research Program grant.[1] At the end of the two-year follow-up period for which the grant was made it was found that fewer than half the students who had transferred as juniors had completed their baccalaureate degree requirements and that nearly one-third were still enrolled. This, together with other factors discussed below, led to a request for funds to make an additional follow-up study of the students who were still enrolled or who had transferred to other colleges. The second grant made it possible to follow the students into the fall term of their fourth year after transfer from junior college, by which time all but a small percentage either had graduated or had withdrawn from college without obtaining their degrees.

Review of the First Study

The original study was undertaken at the request and with the guidance of a joint Committee on Junior and Senior Colleges of the American Association of Colleges, the American Association of Junior Colleges, and the American Association of Collegiate Registrars and Admissions Officers. Concern with the problems of transfer dates back to 1957 when two of the three associations joined forces to study ways of facilitating transfer between the two types of colleges. Soon afterward representatives of the registrars' association were added to the Committee and a modest survey of transfer practices and problems was undertaken. The results were used as a basis for formulating a tentative statement of principles governing transfer between the two types of colleges. However, the Committee recognized the need for research on the performance of transfer students, including characteristics related to performance. The Center was asked by the Committee to develop an appropriate proposal, to seek funds, and to carry out the necessary research. The Committee's objective throughout the study has been the development of a more definitive statement of guidelines for transfer which would be supported by the research findings concerning transfer student performance.

Objectives of the First Study

The major objectives of the first study were to obtain normative information about the characteristics of the junior college students who transferred to four-year institutions; about their performance after transfer, in relation to both their prior performance and the performance of native students who completed all their work at one college; and about prevailing policies and practices in the areas of transfer student admission, evaluation of transfer credit, retention, and articulation and coordination. In addition, a major effort was made to find out the extent to which differences in performance in the four-year colleges could be attributed to the personal characteristics of the students, to their prior educational experience and achievement, and to college and/or program characteristics. Still another major objective of the first study was to gain a better understanding of attrition after transfer, including failure to graduate on time.[2]

Design of the Original Study

The transfer study was conceived as national in scope, involving a majority of the states with a substantial number of public junior colleges and a large proportion of the junior college enrollment in 1960. The number of states was limited to ten, because of the extensive field work proposed in the research design. Sampling of states was made in such a way as to obtain a good geographical distribution and representation of different types of control or coordination of higher education at the state level. The ten states selected are California, Florida, Georgia, Illinois, Kansas, Michigan, New York, Pennsylvania, Texas, and Washington. Within each state an attempt was made to obtain a sample of at least four senior institutions with sizeable numbers of junior college transfer students, including the major state university, at least one private college or university, and several public institutions with different functions, size, and/or degrees of complexity of organization. Although a high level of interest and cooperation was found in all colleges invited to participate in the study, the sampling of institutions fell somewhat short of its objective because of the very small number of full-time junior college transfer students admitted in 1960 by many private colleges.[3] The sample of four-year colleges which finally was selected to participate in the various phases of the study included ten major state universities in nine states (including two campuses of the University of California), 12 other state university campuses in seven states, 10 institutions in six states with a relatively heavy emphasis on teacher education in 1960, eight private universities in six states, and three technical institutions in three states. A list of the participating colleges and universities is given in Table 1, together with the numbers of students sampled at each. All types of two-year colleges were represented in the sample of transfer students who transferred. They included both public and private institutions, located both in the ten-state sample and elsewhere. While most would be described as comprehensive junior colleges, with both transfer programs and terminal programs leading to immediate employment, some were primarily technical institutes and others offered predominantly transfer programs. Some junior colleges still shared facilities with secondary schools while many operated on their own campuses, often under their own governing boards.

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[1] Cooperative Research Project No. 1133. D. M. Knoell and L. L. Medsker, Factors Affecting Performance of Transfer Students from Two- to Four-Year Colleges: With Implications for Coordination and Articulation. Center for the Study of Higher Education, University of California, Berkeley, 1964.

[2] Ibid, pp. 3-4.

A total of 7243 junior college students who transferred in the fall of 1960 comprised the primary study group. The sample was augmented for certain analyses by two groups of 1962 graduates, namely, 1181 junior college students who transferred before 1960 and 3352 "native" students who had attended only the one four-year college which awarded them their degree. The participating institutions were instructed to include in the study all students who transferred from junior college in the fall of 1960, provided that they were awarded junior standing and enrolled on a full-time basis during the 1960 fall term. The criteria for inclusion were relaxed somewhat when it was found that many students who had attended junior college for two years failed to achieve junior standing when they transferred because of small losses of credit and/or failure to meet particular requirements for admission to the upper division. At some colleges, students who transferred after only one year in junior college were also included in the study in order to increase the size of the study group.[4]

A 99-item biographical questionnaire was administered to the fall 1960 transfer group during the spring term after transfer. Items were drawn from the areas of personal and family characteristics, planning for college and career, evaluation of junior college experience, problems in transfer, and participation in extra-curricular activities. A brief version of the questionnaire was administered to the additional samples of 1962 graduates during their last term at the four-year college. Supplementary information was solicited from the transfer students who withdrew or who were dismissed before completing their degree requirements, using a relatively unstructured questionnaire. A final source of response data was a series of interviews with a small sample of students on each campus during their fourth semester after transfer. Complete transcripts of work taken at the four-year college were obtained for all participants in the study. Junior college transcripts and/or credit evaluation forms were also obtained for students who transferred to a large number of four-year colleges which

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[3] At the outset the intent was to sample only those institutions which had admitted at least 100 such students in 1960. The number was chosen on the grounds that this volume of students would require the adoption of institutional policies governing their admission and evaluation, whereas a very small number might be treated on an individual basis according to personal judgments, rather than policy. When it was found that too few colleges had admitted as many as 100 junior college transfers, a more flexible standard was used in deciding whether to include particular colleges in the study sample.

[4] The need for changes in the criteria for sampling colleges and transfer students served to point up a lack of knowledge about the volume and characteristics of the transfer student group. Very few states or colleges were able to cite accurate transfer statistics on which to base the design of the study. Furthermore, the two-fold operating assumption that most transfer students originate in two-year colleges and transfer at the junior level was also found to be untenable. Evidence was obtained from many institutions which showed that a large proportion of the transfer students originate in four-year colleges and that transfers of all types tend to seek admission below the junior level.

Table 1

Numbers and Types of Students in the Four-Year Colleges and Universities Which Participated in the Transfer Student Study

Institutions by Type	1960 Transfers			1962 Graduates		
	Men	Women	Total	Natives	1960 Transfers	Early Transfers
Type 1: Major universities						
University of California:						
Berkeley	470	146	616	203	252	104
Los Angeles	328	134	462	218	223	77
University of Florida	197	65	262	112	55	61
University of Georgia	238	56	294	133	152	-
University of Illinois	177	41	218	82	55	21
University of Kansas	140	50	190	116	37	64
University of Michigan	147	80	227	139	92	42
Pennsylvania State University	228	41	269	143	158	-
University of Texas	186	69	255	137	85	83
University of Washington	258	65	323	110	75	64
Total number	2369	747	3116	1393	1184	516
Type 2: Teachers' colleges						
Georgia Southern College	51	36	87	32	63	22
Kansas State College	129	66	195	89	84	26
Kansas State Teachers College	61	37	98	90	70	26
Central Michigan University	70	53	123	38	53	18
Eastern Michigan University	29	40	69	51	36	22
Western Michigan University	130	73	203	96	84	10
State University of New York:						
New Paltz	14	20	34	13	4	7
Oswego	40	12	52	47	24	1
Sam Houston State Teachers College	83	34	117	74	70	-
Western Washington State College	95	40	135	61	57	30
Total number	702	411	1113	591	545	162
Type 3: Other state colleges and universities						
Long Beach State College	221	136	357	122	157	51
San Francisco State College	294	197	491	166	169	77
Florida State University	161	83	244	145	149	1
Northern Illinois University	86	43	129	68	70	10
Southern Illinois University	42	18	60	67	29	12
Kansas State University	126	28	154	68	37	-

Table 1 (continued)

Institutions by Type	1960 Transfers			1962 Graduates		
	Men	Women	Total	Natives	1960 Transfers	Early Transfers
Type 3 (continued)						
Michigan State University	140	54	194	116	112	72
Wayne State University	127	55	182	67	41	76
University of Michigan:						
Dearborn	53	12	65	-	-	-
Flint	39	24	63	-	-	-
Texas Technological College	108	44	152	123	58	66
Washington State University	74	24	98	78	35	29
Total number	1471	718	2189	1020	857	394
Type 4: Private colleges						
University of Southern California	122	35	157	80	98	-
University of the Pacific	51	28	79	32	29	11
University of Miami	54	36	90	34	23	16
Emory University	42	9	51	46	33	8
Loyola University (Illinois)	43	11	54	45	13	5
Roosevelt University	64	17	81	17	25	21
New York University	43	47	90	-	-	-
Seattle University	17	5	22	-	-	-
Total number	436	188	624	254	221	61
Type 5: Technical schools						
Georgia Institute of Technology	51	-	51	25	2	19
Rochester Institute of Technology	76	5	81	38	7	28
Texas A & M College	69	-	69	28	30	-
Total number	196	5	201	91	39	47
Grand total	5174	2069	7243	3349	2846	1180

recorded only scant information from the junior college record on their own transcripts.

A considerable amount of institutional and state data was also obtained in the course of the study. Materials included catalogs and other informational brochures prepared by the colleges, student and faculty handbooks, institutional studies of student performance, routine statistical reports, and miscellaneous documents which appeared to have value in attempting to gain some understanding of the particular colleges and the transfer process. Interviews were conducted with staff members at each institution who were variously concerned with admissions and records, relations with schools, student affairs, curriculum and instruction, student advising, and many other matters. In addition, considerable time was spent in attendance at state and regional meetings of representatives of the two- and four-year colleges, at which problems of articulation and coordination were discussed.

Selected Findings from the First Study

The most compelling findings from the first study, in terms of their impact on the additional research, were in the area of student performance. By the end of the summer session two years after transfer, only 45 per cent of the students who had been expected to graduate by that time did in fact do so. Slightly more than half the non-graduates (or 31 per cent of the total study group) were still enrolled and eligible to continue in the next regular term. Twenty-eight per cent of the total group was no longer enrolled at the college to which they had transferred in 1960, including 11 per cent who were dismissed for poor scholarship and eight per cent who withdrew voluntarily with grade-point averages below C.[5] A relatively large percentage of the withdrawals with whom contact was made intended either to re-enroll at the same college or to transfer to a different institution. Many had already transferred with no loss of time, including some who withdrew with poor academic standing. Differences among the four-year colleges in student performance were also very striking and seemed to have implications for further research. Comparisons involving different types of college, e.g., major state universities and teachers colleges, different states, and different colleges within particular types or states were all generally significant. Statistical tests of differences in performance involved both grade-point averages and percentages of graduates and dropouts.

Both institutional and individual factors appeared to be related to the differences in the performance of students who transferred to the various colleges. Probability of "on-time" graduation was found to be related to choice of major field, as well as choice of four-year college. Significant sex differences in performance were also found, which were related in part to choice of major. An analysis of policies governing the admission, evaluation, and retention of transfer students showed that there was a considerable amount of ambiguity in catalog and other statements of standards and criteria, although differences among the colleges in actual practice were less than what the policy statements implied. Junior college students with C averages were admissible in 1960 to all public four-year colleges in most of the 10 states in the study, regardless of the quality of their high school preparation or the amount of junior college work completed. Many of the private universities were equally liberal in admitting junior college transfer students. It was also found that some students who had failed to earn an overall average of C in junior college could be admitted to at least one four-year college in most states, where they would have a further opportunity to pursue baccalaureate degree work. However, there was some evidence that changes in standards at both the freshman and the transfer levels were imminent as competition increased for admission to many four-year colleges which were facing over-crowding.

Although a C average appeared to be a common standard for continued enrollment and graduation at most of the four-year colleges, penalties for failure to achieve term and cumulative averages of C varied quite widely. The penalties differed with respect to the objectivity with which they were imposed and to the number of terms in which students were permitted to enroll with poor grades before dismissal action was taken. Considerable communality was found in practices governing the acceptance of junior college credit in an amount equal to about half the credit required for the baccalaureate degree. However, variance was found in the detailed practices governing the awarding of various types of credit, including the acceptance of courses in which grades of D were earned. In any event, it was found that articulation and coordination among the colleges, particularly at the state level, was rather limited at the time the study group entered college. The major flow of junior college transfer students in 1960 was to the major state universities, except in California, with the result that articulation activity often involved only these two types of colleges. Too, the major emphasis of the four-year colleges was still on articulation with the high schools, rather than the junior colleges. Finally, machinery for formal coordination in higher education was still rather new and untried in most states in 1960.

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[5] The percentage of graduates was based on the number of students who transferred with enough credit to make graduation two years hence appear quite probable. Percentages of transfer students who were still enrolled and withdrawn were based on the total number of students in the 1960 transfer group, regardless of their class standing at the time of transfer.

Findings related to native-transfer student differences also appeared to have implications for further research. A comparison of the two groups of graduates showed that the native students tended to earn significantly lower grade-point averages during their first two years in college than the transfers did in junior college. However, the native group earned significantly higher grade-point averages in the upper division, when the two groups were in direct competition for grades in the same institutions. The tendency was most pronounced in the major state universities and least so in the teachers colleges. The findings can be explained in part by the drop in grades suffered by the junior college students immediately after transfer, as a result of their having to make an academic adjustment to a new, often very large university, and a social adjustment to living away from home for the first time, often under rather trying circumstances. Justification for additional research was found in the availability of ability and placement test data for both native and transfer students at a number of the participating colleges, which might be used to gain some further understanding of differences in the performance of the two groups. Only rarely were test scores used in making decisions about the admission of either type of student and there was little evidence that the scores of transfer students were used in either placement or advising, as was sometimes done at the freshman level.

Another important finding from the first study is that the graduates who began their baccalaureate degree programs in junior college took no longer to achieve their degree objectives than those who took all their work at a single college, when comparisons were based on amount of time spent and units earned in the upper division. The transfer students showed a greater tendency than the natives to drop out of college one or more times during their programs, or to delay their initial entry into college, but the two groups did about equally well in terms of the amount of time they were actively enrolled in college. Other significant findings from the first study, which have relatively little importance for the second, may be summarized briefly, as follows:

1. Considerably less variability was found in the personal characteristics of the junior college transfer students than was expected, taking into consideration the kind of clientele the junior college attempts to serve.

2. Characteristics which are related to social class membership tended to differentiate the junior college transfer students from their native student counterparts. The junior college students were found to have had much less economic capability than the students who entered four-year colleges directly after high school, as a result of these social class differences.

3. The junior college students rated the quality of instruction they received in junior college very favorably. A high percentage said that they would again choose a junior college over a four-year institution at the freshman level, if they were confronted with such a choice.

4. Among the individual characteristics related to performance after transfer, achievement in high school and junior college was found to account for much more of the variance in performance than socio-economic and other non-intellective characteristics.

5. Transfer students who dropped out before completing their degree requirements had earned lower junior college grades than those who graduated or were still enrolled at the end of the study. Although more than two-thirds of the dropouts earned grades below C after transfer, the causes of their attrition appeared to be multiple. Financial problems plagued a large percentage of the dropouts, while others were affected by motivational problems which often dated back to the time they first entered junior college.

Certain conclusions from the findings about the success of the transfer students were held in abeyance, pending the outcome of the second follow-up study. Among the reasons for the postponement of the conclusions were those related to the large percentage of students who were still enrolled for a third year after transfer, the greater than anticipated variability in performance at the four-year colleges, and changes expected to take place in admission policies and coordination in the early 1960's.

Design of the Second Study

The approach in the original study of transfer student performance was necessarily normative and statistical, rather than analytical and evaluative. Before the study was undertaken, there were no recent baseline data concerning transfer student characteristics and performance, except at scattered institutions. A first priority, therefore, appeared to be the preparation of a detailed description of the junior college transfer student population, which would involve both personal and performance characteristics. The emphasis in the second study, which was determined in part by the outcomes of the first, was three-fold: a more or less final accounting of the success of the transfer students, in terms of their attainment of degree objectives; an analysis in some depth of additional factors related to their performance in the various colleges; and an inquiry into changes in policies and practices which had been made since the initiation of the first study. In general, the objectives which guided the design of the second study were:

1. An assessment of the junior college transfer function, in terms of student achievement of degree objectives within a reasonable time after transferring from the junior college.

2. An evaluation of the relative contribution of various types of test data to the prediction of success after transfer.

3. An analysis of differences between the native and transfer students in terms of their native ability, and an evaluation of the implications for setting admission policies at the four-year institutions.

4. An assessment of the factors which tended to delay graduation from particular colleges or to result in the failure of large numbers of transfer students to achieve their degree objectives.

5. A documentation of changes and trends in admission, retention, and graduation policies at the participating institutions, together with recent developments in articulation and coordination.

A very considerable amount of student data and institutional materials was collected in the course of the first study, which could not be adequately analyzed under the terms of the original grant. These data were the subject of further analyses in the extended study. In addition, it was necessary to obtain some new data in order to achieve the objectives of the second study. These included a final enrollment check of the students who had not graduated in 1962 and a follow-up of new dropouts who withdrew after the spring of 1962. Transcripts were requested for all known students who dropped out and subsequently enrolled in another four-year institution between 1960 and 1963. A number of institutions were asked to furnish additional test data in order to make certain comparisons of native and transfer students which had not been anticipated in the original data collection. Finally, near the end of the study, appropriate staff members in the cooperating institutions were asked to report significant changes since 1960 in admission policies and standards for entering freshmen and transfer students, credit evaluation practices, standards for student probation and dismissal, and graduation requirements. A new attempt was also made to collect information and materials relating to articulation and coordination at the local, regional, and state levels.

The various analyses of data were designed to provide answers to the following questions:

1. What percentage of the 1960 transfer group achieved their baccalaureate degree objectives by the beginning of the fourth year after transfer from junior college? How many students were still enrolled at the end of the study who might still be expected to complete their degree programs?

2. Did the success of the transfer students vary with the amount of work they completed in junior college before transfer? In other words, were students who transferred with full junior standing more successful in attaining their degree objectives than students who transferred after only one year in junior college?

3. How successful were the dropouts who transferred to other four-year colleges? How many dropouts re-entered the college to which they transferred in 1960?

4. How many students failed to graduate on time because of poor grades? How many lacked enough units to graduate on time, as a result of reduced course loads or failure in particular courses?

5. Could specific courses or areas of study be identified which caused trouble for large numbers of transfer students at particular colleges with high attrition rates?

6. Did ability test data differentiate among groups of transfer students who graduated on time, dropped out before graduation, and persisted to delayed graduation? Did the time of the testing, i.e., high school, freshman, or transfer, appear to affect the relationship?

7. Did the transfer students who received their degrees differ from the native students with respect to academic ability and levels of skills in English usage, reading, and mathematics? Did native students with very high ability earn higher grade-point averages in the upper division than transfer students with similar ability?

8. What changes have taken place since 1960 in policies and practices governing the admission, evaluation, retention, and graduation of transfer students? What changes have taken place at the freshman level?

9. What are the recent significant developments in the areas of articulation and coordination in higher education? What promising practices and trends can be identified which might serve as models for colleges and states which are just now developing articulation machinery?

The major areas emphasized in the report of the second study are the final determination of the degree status of the transfer students, an analysis of additional factors affecting performance, the relationship of test data to the success of the transfer students, a comparison of native and transfer students on the basis of test data, and an analysis of recent changes in policies and practices affecting transfer students, including articulation and coordination. The chapters which follow are organized in terms of these broad areas.

CHAPTER 2

THIRD-YEAR FOLLOW-UP OF THE TRANSFER STUDENTS

Introduction

A major impetus for the third-year follow-up study of the students who transferred from junior colleges in 1960 was afforded by the finding that fewer than half the students had received their baccalaureate degree after two years and that nearly one-third were still enrolled in the four-year colleges. Furthermore, a large number of the dropouts reported either that they were planning to re-enroll at the same college or that they had transferred to another college to pursue their degree program. The findings from the two-year study thus tended to cast some doubt on the success of the junior colleges in their performance of the transfer function, or on the effectiveness of articulation between the two types of colleges. The outcome for the rather considerable group of students who were still enrolled more than two years after transfer was believed to be of critical importance in reaching a conclusion about the performance of the transfer function.

For this reason a final enrollment check of the transfer students who did not graduate in 1962 was made during the fall 1963 term, i.e., at the start of what would have been their fourth year at the four-year college. The colleges were asked to check the enrollment status of each non-graduate for the purpose of finding out how many students were graduated three years after transfer from junior college, how many were still enrolled (but not graduated) in the fourth year after transfer, and how many additional withdrawals or dismissals had taken place after the completion of the second year. Furthermore, the four-year colleges to which students in the attrition group said they had transferred were asked to verify their enrollments and to furnish transcripts showing work through the fall 1963 term.

Status Three Years after Transfer

Results of the third-year follow-up study are summarized for the individual participating colleges in Table 2 and for the five types of colleges in Table 3. The percentage of graduates was found to have increased from 40, at the end of the 1962 summer sessions, to 62 at the end of the 1963 sessions.[1] Only nine per cent of the students were still enrolled at the undergraduate level at the beginning of the fourth year after transfer, compared with about 30 per cent at the beginning of the third year. On the other hand, attrition remained fairly constant from 1962 to 1963 with an increase of only one per cent, from 28 to 29. The percentage of academic dismissals actually decreased from 11 to 10 as a result of reinstatements in 1962-3, while voluntary attrition increased from 17 to 19 per cent.

Differences among particular types of colleges, and between the sexes, were somewhat smaller after the 1963 follow-up study than in 1962, particularly with respect to the percentages of graduates. When class level at the time of transfer was controlled, the major state universities, as a type, showed the greatest amount of change. This was the result of the delayed graduation of large numbers of engineering students from three institutions with poor records of "on-time" graduation in 1962. Among the 10 major state universities the range in the final percentage of graduates was from 43 to 72, with only eight per cent of the students still enrolled in 1963 in the institution with the lowest percentage. Only two of the 10 universities graduated more than 70 per cent of their transfer students, while two others graduated fewer than 50 per cent during the three-year follow-up period. The best record was made in the teachers colleges and the other state universities, none of which graduated fewer than 50 per cent and 12 of which (among 22 institutions) graduated at least 70 per cent of the transfer students whom they admitted in 1960. The range in percentage of graduates from all 43 participating institutions was from 29 (for one of the technical institutions) to 91 (for one of the teachers colleges), with a median of about 67 per cent.

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[1] The finding of 40 per cent is based on the total 1960 transfer group and includes students who transferred with both sophomore and junior standing. The percentage for the junior standing group alone, which was reported in the previous study, was 45 per cent.

Table 2

Academic Status of Students Three Years after Transfer to Four-Year Colleges, by Type of Four-Year College (In per cent)

A. Major State Universities (Type 1)

Status	Sex	California: Berkeley	California: Los Angeles	Florida	Georgia	Illinois	Kansas	Michigan	Pennsylvania	Texas	Washington	Total
Grad-uated	Men	60	72	56	71	39	44	50	71	60	50	60
	Women	59	60	54	71	59	66	71	76	54	44	60
	Total	60	68	56	71	43	50	57	72	58	49	60
Still enrolled	Men	9	7	11	5	9	12	23	11	11	14	10
	Women	2	2	6	2	2	2	4	2	3	5	3
	Total	7	5	10	5	8	10	17	9	9	12	8
With-drawn	Men	31	21	32	24	52	44	27	18	29	36	30
	Women	39	38	40	27	39	32	25	22	43	51	37
	Total	33	27	34	24	49	40	26	19	33	39	32

B. Teachers Colleges (Type 2)

Status	Sex	Georgia Southern	Kansas: Pittsburg	Kansas: Emporia	Central Michigan	Eastern Michigan	Western Michigan	New York: New Paltz	New York: Oswego	Texas: Sam Houston	Western Washington	Total
Grad-uated	Men	90	62	87	60	79	72	69	85	77	72	73
	Women	92	74	76	79	75	77	38	83	68	55	73
	Total	91	66	83	68	77	74	50	85	74	67	73
Still enrolled	Men	2	5	3	14	7	12	8	2	11	8	8
	Women	0	3	0	0	7	4	0	0	3	5	3
	Total	1	4	2	8	7	9	3	2	9	8	6
With-drawn	Men	8	33	10	26	14	16	23	12	12	20	19
	Women	8	23	24	21	18	19	62	17	29	40	24
	Total	8	30	15	24	16	17	47	13	17	25	21

Table 2 (continued)

C. Other State Universities (Type 3)

Status	Sex	California: Long Beach	California: San Francisco	Florida	Northern Illinois	Southern Illinois	Kansas	Michigan State	Wayne State	Univ. of Mich.: Dearborn	Univ. of Mich.: Flint	Texas Technological	Washington State	Total
Graduated	Men	62	51	81	73	76	50	77	63	58	79	55	73	62
	Women	73	52	78	72	67	50	78	86	75	84	86	62	68
	Total	67	51	80	73	73	50	77	71	61	81	64	70	64
Still enrolled	Men	11	11	1	2	9	15	4	16	19	3	15	5	10
	Women	7	5	5	0	11	11	4	2	8	0	5	0	5
	Total	9	9	2	2	10	14	4	11	17	2	12	4	8
Withdrawn	Men	27	38	18	25	14	35	18	21	23	18	31	22	28
	Women	20	43	17	28	22	39	18	12	17	16	9	38	27
	Total	24	40	18	25	17	36	19	18	22	17	24	26	28

D. Private Universities (Type 4) and Technical Institutions (Type 5)

Status	Sex	Univ. of the Pacific	Univ. of Southern Calif.	Miami	Emory	Loyola	Roosevelt	New York	Seattle	Total	Georgia Inst. of Technology	Rochester Inst. of Technology	Texas A & M	Total
Graduated	Men	47	82	44	62	44	47	33	29	56	-	-	-	-
	Women	50	74	25	89	45	47	41	40	48	-	-	-	-
	Total	48	80	37	67	44	47	37	32	53	29	46	72	51
Still enrolled	Men	23	9	7	0	16	14	18	18	12	-	-	-	-
	Women	4	6	19	0	9	18	4	0	9	-	-	-	-
	Total	16	8	12	0	15	15	11	14	11	25	14	12	16
Withdrawn	Men	30	9	48	38	40	39	49	53	32	-	-	-	-
	Women	46	20	56	11	46	35	55	60	43	-	-	-	-
	Total	36	11	51	33	41	38	52	54	36	45	40	16	33

Table 3

Summary of the Academic Status of Students Three Years after Transfer to Four-Year Colleges, by Type of Four-Year College
(In per cent)

Status (Fall 1963)	Type of Four-Year College													Total		
	1			2			3			4			5			
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Total	Men	Women	Total
Graduated	60	60	60	73	73	73	62	68	64	56	48	53	51	61	64	62
Still enrolled	10	3	8	8	3	6	10	5	8	12	9	11	16	10	4	9
Not enrolled and not graduated																
Voluntary	16	26	19	12	18	14	17	23	19	21	37	26	30	17	24	19
Dismissal	14	11	13	7	6	7	11	4	9	11	6	10	3	12	8	10
Total	30	37	32	19	24	21	28	27	28	32	43	36	33	29	32	29

The total percentages of men and women who graduated by the end of the three-year period after transfer were about the same, namely, 61 for the men and 64 for the women, although there was a difference of 11 per cent in 1962 when on-time graduation rates were compared. Further examination of the findings in Table 2 showed wide variation in sex differences among the individual institutions, however. Sex differences in graduation rates of at least 10 per cent were found for 17 institutions, at 11 of which a larger percentage of women were graduated and at six, a larger percentage of men. The differences appeared to be related to local factors associated with particular institutions, rather than to factors related to type of college.

Changes in Status in 1963

While the overall findings for the three-year follow-up period provided the grounds for drawing conclusions about the transfer function, an analysis of the data obtained in the third-year enrollment check, alone, was expected to provide some insight into the various patterns which the students followed in obtaining their degrees. The group to which particular attention was paid included nearly 2200 students who were still enrolled but not graduated in 1961-2 and about 2000 students who had dropped out by that time. Too often in follow-up studies of limited duration the assumption is made that students who persist to the time they might normally be expected to graduate will in fact do so in one or two additional semesters. The findings for the 1960 transfer group are that only 64 per cent of the students about whom such an assumption might have been made did graduate by the end of one year (plus summer sessions) beyond the "normal" graduation time. Nineteen per cent were still enrolled the following fall, who would presumably graduate shortly thereafter, and 17 per cent had withdrawn. An undetermined number of students in the attrition group, some of whom completed a dropout questionnaire, needed only one or two additional courses to satisfy graduation requirements, which they expected to complete in extension or by correspondence. Since they were no longer enrolled on campus they were regarded as dropouts by the college from which they expected to receive their degree. Only 43 students were dismissed for poor scholarship as a result of their work during the third year after transfer. The 43 constituted 12 per cent of the third-year attrition group but less than two per cent of the persisting students who were still enrolled at the start of the third year after transfer.

The percentages of students who graduated, persisted, and withdrew during the third year after transfer varied for the five types of colleges in roughly the same pattern as was found for the total follow-up period. The teachers colleges, as a type, had the largest percentage of graduates during the third year and the private universities the smallest. The private universities also experienced the highest attrition rate of the five types of colleges. Attrition was relatively low among the students who persisted at the technical institutions for a third year, many of whom had been required to start their degree programs almost at the freshman level after transferring from junior college.

Only 16 per cent of the students who dropped out prior to spring 1962 re-entered the same college in 1962-3, although a much larger percentage had expressed their intention to do so. Four per cent graduated during this period, an additional eight per cent persisted into the fourth year without graduating, and four per cent dropped out again without earning their degrees. The technical institutions, as a group, were more successful in salvaging their dropouts than the other types of colleges. Nine per cent of their dropouts re-enrolled and graduated in 1962-3, compared with an all-college rate of only four per cent.

The 1963 graduates completed their degree requirements at various times during the 1962-3 academic year and the summer session which followed. Although transcripts were not obtained, the colleges were asked to report the date when each graduate finished his degree program. An attempt was then made to calculate the total numbers of terms after transfer in which the 1963 transfer students were enrolled in continuous attendance. The results are summarized in Table 4, by class level at time of transfer and by type of four-year college. About 46 per cent of the 1963 graduates who transferred with junior standing enrolled for only one additional semester or quarter beyond their "normal" graduation date. About the same percentage required a full year's work and nine per cent needed an additional summer session after their third year, in order to complete their degree requirements. Students at the teachers colleges appeared more likely to complete their programs in one additional term than students at other types of colleges. In many instances the student teaching experience

Table 4

Percentages of 1963 Graduates in Continuous Attendance Who Required Various Numbers of Terms after Transfer in Order to Complete Graduation Requirements, by Class Level at Time of Transfer[a]

Class Level	Extra Terms Required[b]	Type of Four-Year College					Total
		1	2	3	4	5	
Junior (N = 1084)	5 semesters	40	43	34	47	19	38
	6 semesters	21	27	41	45	30	30
	6 + final summer session	5	4	8	8	51	8
	7 quarters	9	9	9	0	0	8
	8 quarters	9	4	4	0	0	6
	9 quarters	15	8	3	0	0	9
	9 + final summer session	<1	5	1	0	0	1
Sophomore (N = 214)	5 semesters	1	52	31	15	0	25
	6 semesters	17	34	65	55	0	36
	6 + final summer session	3	11	2	20	0	7
	7 quarters	6	0	0	5	0	2
	8 quarters	24	0	2	0	0	9
	9 quarters	42	3	0	5	88	18
	9 + final summer session	7	0	0	0	12	3

[a] Percentages were computed for sophomore and junior level transfers, independently.

[b] Trimesters were equated to quarters.

constituted the final term's work, leading to both the degree and the teaching credential.

The percentage of graduates among the students who transferred at the sophomore level was relatively small. However, more than one-third of the graduates completed their degree programs in less than three full years after leaving the junior college. Although this record looks promising, the findings should be viewed with caution. First, many of those who transferred with sophomore standing had earned more than 30 units of credit in junior college but not enough for junior standing, with the result that they transferred as second-semester sophomores. Too, it would have been possible for these students to attend two full summer sessions at the four-year college, which would equal at least one regular semester or quarter. Finally, it will be recalled that the overall record of the students who transferred as sophomores was quite poor, in that only a small percentage graduated within three years after transfer.

A comparison of the amounts of time spent in the four-year college by graduates who transferred at the sophomore and junior levels was difficult because the follow-up of the former group ceased at what might have been regarded as its normal graduation date, three years after transfer. The findings show only that the transfer students completed their degree requirements at various times during the academic year, both before and after their "normal" graduation date. As colleges begin year-round operations, with full programs offered during the summer, the concepts of time spent and semesters enrolled will become even less meaningful than in the present study when most institutions followed either a two-semester or three-quarter system, with six-week summer sessions.

Status of Part-Time Students

The design of the study provided for the sampling of only those transfer students who were enrolled on a full-time basis during their first term at the four-year college, i.e., for at least 12 units. However, at three institutions the number of part-time students who were enrolled in degree programs constituted such a large percentage of the transfer group that they were included in the third-year follow-up. Data for part-time and full-time students were not combined. The colleges were asked to check the 1963 enrollment status of the part-time transfer students in order to find out how many had graduated, were still enrolled at the beginning of the fourth year after transfer, or had withdrawn or been dismissed. The three institutions are San Francisco State College, Wayne State University, and New York University. All are located in large metropolitan areas and tended to attract students who were regularly employed, often on a full-time basis. The educational pursuits of these students thus tended to have a lower priority than their occupational and family interests.

The analysis was limited to those students who appeared to have been making fairly regular progress toward their degree objectives, at least in the first term. It was expected that such students might graduate three years after transfer with junior standing, since they would also have had an opportunity to enroll in as many as three summer sessions at the four-year colleges. A total of 134 such students were identified for study at the three colleges, including 55 at San Francisco State, 47 at Wayne State, and 32 at New York University. More than one-third of the students were enrolled in liberal arts programs, one-fourth in business administration, and nearly 20 per cent in teacher education, usually at the elementary level. The remainder were in various majors in applied fields.

Three years after transfer, by the beginning of the fourth year, 19 per cent of the part-time students had obtained their baccalaureate degree, 19 per cent were still enrolled in degree programs, and 62 per cent were not currently enrolled. The lowest incidence of attrition and the highest of graduation was found for Wayne State University, the reversal for New York University. High tuition and the achievement of intermediate occupational goals may have accounted for the high attrition at the latter institution. Analysis of attrition for the combined part-time groups at the three institutions showed that only 11 per cent of the dropouts were dismissed for poor scholarship. However, only 56 per cent of the students were enrolled in continuous attendance beyond the first year and all the dismissals occurred in this relatively small group. About 30 per cent of the attrition for all reasons occurred during the first year and an additional 30 per cent at the end of the first year. Twelve per cent of the students pursued patterns of sporadic attendance which ended in attrition at the time the final enrollment check was made. Two students who were dismissed enrolled in junior college for further work while six of the voluntary withdrawals took work at other four-year colleges, in most cases as part-time students. Two students enrolled in extension courses following their withdrawal from resident programs.

The record of the part-time students who transferred to these three colleges was not as good as that of the full-time students, in terms of either attrition or graduation within a reasonable time after transfer. Compared with the record made by the full-time students during the three-year study, the attrition rate of the part-time students was twice as great and the graduation rate less than one-third that of the students who began their work in the four-year colleges as full-time students. The findings were not entirely unexpected, although the belief is commonly held that part-time students, when given sufficient opportunity, are highly successful. Even if degree objectives were attained eventually, one might question the effectiveness of the learning experience when spread out over a considerable period of time in the upper division.

Findings by Class Level at the Time of Transfer

There is considerable disagreement among the two- and four-year colleges concerning the optimum time in the program for the students to transfer, assuming that they have achieved satisfactory junior college grades and have met other transfer admission requirements. On the one hand, the junior colleges feel that they can do the best job of preparing students for transfer if they are able to keep the students for two full years after high school. The universities, on the other hand, often believe it to be to the advantage of the students to transfer after only one year in junior college, in order to complete particular lower division requirements or to have certain instructional experiences which cannot easily be offered in the junior college. While studies made in California public institutions have tended to show the superiority of the performance of students who transfer after two years in junior college over that of students who transfer after only one, the issue apparently has not been studied systematically elsewhere.[2]

Final Enrollment Status

The enrollment status of the students in the fall term three years after transfer is given in Table 5 by class standing at the time of transfer. The findings are quite clear that the students who transferred as juniors were considerably more successful in the four-year colleges than the students who transferred after only one year in junior college. Attrition in the sophomore group was nearly 75 per cent higher than in the junior group, for both academic and other reasons, while the percentage of graduates was only about half as many as occurred in the junior group. The comparison of percentages of graduates three years after transfer is somewhat unfair to the sophomore group since many had completed a total of only four years of college, compared with five years on the part of the group which transferred as juniors. However, if the optimum time for most students to transfer is indeed at the end of the first year in junior college, rather than the second, one would have anticipated a considerably lower incidence of attrition and a higher rate of graduation for the sophomore group.

A much more rigorous comparison of the percentages of graduates involves the concept of "on-time" graduation, i.e., two years after transfer at the junior level and three years after transfer at the sophomore level. The appropriate percentages to be compared in this case are 45 for the junior level group (including those who entered with sub-junior standing) and 35 for the sophomores. However, since only 20 per cent of the latter group was still enrolled for a fourth year after transfer, the maximum percentage of graduates which might be obtained under rather favorable conditions of retention is 55, which is less than the 62 per cent already obtained for the junior group. Since nine per cent of the latter group was still enrolled in 1963-4, its potential percentage of graduates would be 71, which might be compared with the 55 (maximum) for the sophomore group.

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[2] Unpublished studies made by the California State Colleges and the Division of State Colleges and Teacher Education (State Department of Education), 1958-60.

Table 5

Enrollment Status of Junior College Transfer Students Three Years after Transfer, by Type of College to which They Transferred and Class Standing at Time of Transfer (In per cent)

Final Enrollment Status	Sex	Type of Four-Year College															Total		
		1			2			3			4			5					
		Junior	Sub-Junior	Sophomore	Junior	Sub-Junior	Sophomore	Junior	Sub-Junior	Sophomore	Junior	Sub-Junior	Sophomore	Junior	Sub-Junior	Sophomore	Junior	Sub-Junior	Sophomore
Graduated	Men	64	48	25	76	61	59	67	47	36	66	45	22	66	19	52	67	49	33
	Women	66	40	32	77	53	58	75	41	50	62	-	30	-	-	-	71	42	42
	Total	65	47	27	76	59	58	70	46	40	65	45	25	66	19	52	68	48	35
Still enrolled	Men	8	11	27	7	4	19	8	17	20	8	15	23	8	40	16	8	11	25
	Women	1	8	8	2	6	5	4	24	8	5	-	22	-	-	-	3	10	10
	Total	6	10	22	5	5	14	6	18	17	7	15	23	8	40	16	6	11	20
Withdrew voluntarily	Men	15	18	27	11	15	11	15	20	22	15	23	43	21	41	30	15	21	26
	Women	23	34	42	17	23	21	17	18	37	27	-	40	-	-	-	20	30	35
	Total	17	21	31	14	17	15	16	20	25	19	23	42	21	41	30	17	22	30
Dismissed	Men	13	23	21	6	20	11	10	16	22	11	17	12	5	0	2	10	19	16
	Women	10	18	18	4	18	16	4	17	5	6	-	8	-	-	-	6	18	13
	Total	12	22	20	5	19	13	8	16	18	9	17	10	5	0	2	9	19	15
Total withdrawn	Men	28	41	48	17	35	22	25	36	44	26	40	55	26	41	32	25	40	42
	Women	33	52	60	21	41	37	21	35	42	33	-	48	-	-	-	26	48	48
	Total	29	43	51	19	36	28	24	36	43	28	40	52	26	41	32	26	41	45

The findings are even more compelling if the results for the junior level transfer group are presented separately for the students who were admitted with full junior standing and for those who had sub-junior standing as a result of losing credit in transfer. Among the most prominent reasons for loss of credit by this group were poor but passing grades in some junior college courses, and enrollment in what were regarded by the four-year colleges as remedial or sub-collegiate courses. Thus the "sub-junior" group tended to be of lower quality or less well prepared, or both, than the group which transferred with full junior standing. The inference is well borne out by the findings, for only 48 per cent of the sub-junior group graduated within three years after transfer, compared with 68 per cent of the group with full junior standing. Attrition was 41 per cent in the former group, compared with only 26 per cent in the latter. Nineteen per cent of the sub-junior group was dismissed for poor scholarship, compared with only nine per cent of the group with full junior standing. With the exception of the dismissal rate, the record of the sub-juniors was generally better than that of the sophomores. A higher percentage of the former group graduated within three years after transfer and a slightly lower percentage withdrew voluntarily. However, the record of the transfers with full junior standing is clearly superior to that of the students with sub-junior and sophomore standing at the time of transfer, with respect to both graduation and attrition. The junior colleges thus appear to have been more successful in preparing the students whom they retained for two full years before transfer than with the students who entered four-year institutions after only one year or with less than junior standing.

Class level at the time of transfer appears to be of greatest importance in the major state universities and in the private universities. Attrition in the sophomore group was found to be more than 50 per cent at these two types of colleges, compared with about one-third in the junior group. Similarly, the percentages of graduates among the junior transfers was more than twice as large as the percentage among the sophomores. On the other hand, class level at transfer appeared to be of little or no importance at the technical institutions, in terms of both attrition and graduation. The finding for two of the technical institutions may be an artifact arising from the practice of requiring nearly all junior college transfers to enter the baccalaureate degree program at the sophomore level. For this reason a large number of students who had spent two years in the junior college were classified as sophomores when they transferred, since there was almost no likelihood of their completing their program in two additional years.

Findings concerning differences among students who transferred at the various class levels appear to have been about equally true for men and women. Women who transferred as sophomores were somewhat more likely to withdraw for personal reasons than were men at the same class level. However, differences did not appear to be large enough to have implications for counseling or admissions. In all phases of the analysis there was a somewhat greater tendency for women than men to withdraw with good grades, both before and after transfer. At the same time, the women who persisted were found to be more likely than the men to complete their degree programs within the minimum possible number of semesters after transfer.

Grade-Point Averages

Mean grade-point averages earned before and after transfer are given in Table 6 for students who transferred at various class levels, by enrollment status at the end of the two-year follow-up study and by type of four-year college. The analysis was limited to the 18 institutions which had included sophomore level transfer students in the study group. Status at the end of two, rather than three years was chosen as the basis for classifying students since grade-point averages were available for only the first two years after transfer. It was found that the students who transferred with full junior standing earned higher grade-point averages, both in junior college and after transfer, than those who entered the four-year colleges with only sophomore or sub-junior standing. The one exception to the generalization was the junior college average earned by the students who transferred as sophomores to the major state universities, which was slightly higher than that of the juniors. A comparison of the averages earned by the sophomore and sub-junior transfer students showed that the grades earned after transfer by the sub-junior group were generally higher than those earned by the sophomores, if final enrollment status and type of college are ignored. However, the sub-juniors who did not graduate two years after transfer earned grades which were generally lower than those of the sophomores, both in junior college and after transfer.

Table 6

Mean Grade-Point Averages Earned in Junior College and after Transfer by Students Who Were Admitted with Varying Class Standing, by Enrollment Status Two Years after Transfer and Type of Four-Year College

Type of Four-Year College	Grade-Point Average	Enrollment Status and Class Standing								Total		
		Graduated		Still Enrolled			Withdrawn					
		Sub-Junior	Junior	Soph-omore	Sub-Junior	Junior	Soph-omore	Sub-Junior	Junior	Soph-omore	Sub-Junior	Junior
1	Junior college	2.83	2.82	2.87	2.65	2.68	2.66	2.45	2.52	2.77	2.60	2.71
	4-year college	2.61	2.71	2.47	2.47	2.44	1.57	1.40	1.63	2.05	2.05	2.37
2	Junior college	2.61	2.64	2.50	2.26	2.32	2.29	2.21	2.28	2.42	2.34	2.49
	4-year college	2.83	2.74	2.46	2.31	2.36	1.73	1.84	1.88	2.19	2.29	2.49
3	Junior college	2.30	2.75	2.51	2.37	2.72	2.29	2.23	2.37	2.43	2.30	2.66
	4-year college	2.89	2.64	2.45	2.33	2.43	1.56	1.48	1.67	2.09	2.38	2.38
4	Junior college	2.40	2.77	2.43	2.65	2.55	2.26	2.43	2.70	2.35	2.52	2.69
	4-year college	2.59	2.52	2.38	2.33	2.40	1.77	1.86	2.04	2.12	2.17	2.34
5	Junior college	2.68	2.82	2.76	2.70	2.87	2.59	2.75	2.99	2.69	2.72	2.90
	4-year college	2.58	2.82	2.47	2.36	2.46	1.26	1.52	1.47	2.00	2.10	2.17
Total	Junior college	2.61	2.76	2.65	2.58	2.62	2.47	2.43	2.49	2.57	2.53	2.66
	4-year college	2.71	2.70	2.45	2.40	2.42	1.60	1.55	1.70	2.09	2.15	2.39

A further analysis of the averages earned by the various sub-groups showed that the grade-point differential for the students who transferred at the junior level to the major state universities, while negative, was considerably smaller than that found for the sophomores. At the two other types of public colleges (and for the total group) the advantage enjoyed by the junior transfers was somewhat less, and in the private and technical institutions, the differentials were about the same for all groups. Differences among the colleges in grading standards tended to obscure differences in the performance of the sub-groups, when data for colleges were combined by type, but there was considerable consistency in the findings which showed the superiority of the group which transferred with full junior standing.

Analysis of variance tests were made of the differences in the grade-point averages earned by the transfers at the various class levels, the results of which are given in Appendix Table 1. Tests were made for both the junior college and the four-year college averages earned by transfer students to the five types of colleges, and for all colleges combined. Eight of the 12 F values were significant at the .01 level or better and one at the .05 level. Significant differences were found for both types of averages earned by students at different class levels who transferred to the two types of state universities and to the private institutions, and for the post-transfer averages earned at the teachers colleges. Neither F value was significant for the technical institutions where class level did not truly represent the amount of credit earned in junior college.

The junior college averages were based on differing amounts of work taken by the students who transferred at the various class levels. Sophomore transfers had completed at least one year in junior college but less than two, while the two junior level transfer groups had completed two years before transfer. The four-year college averages were based on different phases of the degree program taken by the comparison groups, i.e., sophomore and junior level courses by one group and primarily upper division courses by the other. A detailed analysis of transcripts for a few institutions which stressed particular general education programs in the lower division showed that the transfer students were much more likely to earn poor or failing grades in these courses than in courses in their major programs. The relatively poor performance of the transfers at the sophomore level may thus be attributable to their difficulty with general education courses which served to screen out many lower division native students. Junior level transfers who had not completed their general education requirements were also enrolled in such courses and encountered the same difficulties. However, their programs usually included some courses in their major field, as well as in general education, which gave them a higher probability of achieving a satisfactory grade-point average. Thus, while the reasons may not be entirely clear, the evidence is quite compelling that students who transferred from junior colleges as full juniors had a much higher probability of success than transfers at the lower levels, in terms of both grades earned and persistence leading to on-time graduation.

Findings by Major

Still another question of major concern in the assessment of the junior college transfer function is whether the output of graduates in the various major fields differed from the so-called input, i.e., the distribution of students among the various majors at the time of transfer, in comparison with the distribution of graduates. The findings from the two-year follow-up showed that differences in attrition in the various majors were not large but that differences in the percentages of graduates at that time were both large and significant.[3] The chief uncertainty was in the field of engineering, where large percentages of students were still enrolled at the end of the two-year follow-up period.

The majors of the students who graduated in 1962 and in 1963 are shown in Table 7, together with the majors of the combined groups of graduates and of the entire 1960 transfer group. The findings seem quite clear that the percentages of graduates in the various majors corresponded quite closely to the percentages of entering transfer students in the same fields. It may be recalled that nearly 30 per cent of the transfer students withdrew before graduation and that another nine per cent were still enrolled at the end of the three-year follow-up period. In spite of this attrition, the majors of the students who graduated did

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[3] Knoell and Medsker, op. cit., pp. 113-115.

Table 7

Percentage Distributions of the Major Fields of the Transfer Students at Entrance and Among the Graduates, by Type of Four-Year College (In per cent)

Type of Four-Year College	Transfer Group*	Major Field						
		Liberal arts	Science and Mathematics	Engineering	Education	Business Administration	Agriculture and Natural Resources	Other
1	1962 graduates	34	12	13	10	19	5	7
	1963 graduates	23	12	33	10	12	5	5
	Total graduates	30	12	20	10	16	5	6
	Total entrants	32	15	20	8	15	4	6
2	1962 graduates	22	10	<1	38	20	2	8
	1963 graduates	32	8	2	29	11	1	17
	Total graduates	25	10	1	35	17	1	11
	Total entrants	27	9	1	33	19	1	10
3	1962 graduates	31	8	3	31	20	2	5
	1963 graduates	28	12	13	17	20	5	5
	Total graduates	29	10	7	26	20	3	5
	Total entrants	31	10	8	23	19	3	6
4	1962 graduates	36	14	4	12	33	0	<1
	1963 graduates	30	9	13	14	28	0	6
	Total graduates	34	13	7	12	32	0	2
	Total entrants	38	14	6	13	29	0	<1
5	1962 graduates	5	5	15	0	15	29	31
	1963 graduates	0	10	60	0	9	16	5
	Total graduates	3	8	38	0	11	22	18
	Total entrants	6	4	47	1	8	15	19
Total	1962 graduates	30	11	7	21	21	4	6
	1963 graduates	25	11	22	15	15	5	7
	Total graduates	29	11	12	19	19	4	6
	Total entrants	31	12	13	17	18	3	6

*"Total entrants" include all 1960 transfer students, regardless of their eventual graduation status.

not differ markedly from the majors of the total entering transfer group. Stated another way, a transfer student in engineering appears to have had about as good a chance of obtaining his baccalaureate degree as a transfer student with a liberal arts or other major. A slight loss of one or two per cent was found for the majors in liberal arts, science and mathematics, and engineering, while small gains were found for teacher education, business administration, and agriculture. However, students who were still enrolled more than three years after transfer were for the most part in the majors for which small losses were found. Thus, a final tabulation of the graduates which would include the nine per cent of the students who were still enrolled and who presumably would graduate in 1963-4 probably would correspond exactly to the distribution for the entrants.

A further inspection of the findings presented in Table 7 shows that the engineering majors tended to take three, rather than two years to complete their degree programs. In liberal arts, teacher education, and business administration, on the other hand, the percentages of students who completed their requirements two years after transfer were larger than the percentages which took three years. Transfers at the sophomore level constituted 20 per cent of the 1963 graduates and only seven per cent of the total group of graduates. The distribution of their majors did not differ substantially from that of the 1962 graduates who had transferred as juniors. Their inclusion in the 1963 and total percentages thus appeared to have little or no effect on the findings.

It should be cautioned that no inferences can be drawn from the findings concerning the comparability of the majors of native and transfer students. There appeared to be particular majors at each four-year college for which the junior colleges either could not or did not offer lower division preparation. These seemed to differ from college to college and, in some instances, to be related to the absence of articulation efforts or to negative attitudes on the part of staff members at the four-year colleges, as much as to a supposed lack of capability on the part of the junior colleges. A few examples of such majors are music and other performing arts, nursing, agriculture, and engineering science, the latter in institutions not having schools of engineering.

Data were available from a few institutions which made it possible to analyze the broad major fields in which all undergraduate degrees were awarded, for purposes of comparison with the majors of the transfer student graduates. The analyses seemed to show that the distributions of majors of the native and transfer students who received undergraduate degrees from particular institutions often differed quite markedly, but according to no fixed pattern. In general, the transfer students were more likely than the natives to graduate with majors in the applied fields and less likely in liberal arts. The transfer students tended to avoid a number of specialized programs such as music, natural resources, and nursing. At a few universities there was also a disproportionately small number of engineering graduates. Two generalizations may be drawn from the data relating to majors. First, the transfer students appeared to be receiving their fair share of baccalaureate degrees in all or most of the major fields with the heaviest enrollments of native students--liberal arts, science and mathematics, business administration, teacher education, and engineering. Second, while the distribution of majors of the degree recipients varied widely from college to college, the transfer students appeared to have had about the same probability of success in all fields at particular colleges, when given sufficient time to complete their degree requirements.

Performance of the Dropouts at Other Institutions

Among the students who withdrew or were dismissed for poor scholarship, 352 were identified who enrolled in another college during the follow-up period. The registrars of these institutions were asked to confirm the enrollment of the students and to furnish a transcript of their work, if they were in degree programs. The students whose enrollment was thus verified represented 44 per cent of the attrition group which gave information about their withdrawal, but only 17 per cent of the total attrition group. The percentages are believed to be underestimates of the size of the group which transferred to other institutions, for two reasons. First, many students who responded also protested that they had not dropped out of college since they were already enrolled in another institution. Thus, many "dropouts" may have decided that they had been improperly labeled and did not respond to the request for information. Second, a large number of dropouts expressed their intention to enroll at another college at some future date, sometimes unspecified. Many of these students undoubtedly did so after a lapse of time, but no attempt was made to verify their anticipated transfer to another college.

About two-thirds of the students who transferred again after 1960 had withdrawn of their own accord from the first institution, although many had received poor grades which might have resulted in their dismissal if they had persisted longer. The significance of the finding appears to lie in the inference that the percentage of academic failures who found another opportunity to continue their education was about as large as the percentage of voluntary withdrawals who did so. The students who were dismissed often transferred to less complex institutions than the ones which dismissed them. The voluntary withdrawals, on the other hand, tended to transfer to colleges in their home communities or in metropolitan areas where they expected to obtain employment and to establish a permanent residence.

Patterns of Mobility

The largest percentage of withdrawals who entered other colleges transferred to what have been called "other state universities," usually from the major state universities. Nearly one-fourth of the group entered either one of the 12 such participating institutions or a similar type of university. Approximately equal percentages of students entered private colleges and universities, junior colleges, graduate professional schools, and extension or other non-resident programs, which together accounted for 58 per cent of the dropouts who transferred. Of the remainder, nine per cent entered teachers colleges; seven per cent, a major state university; and two per cent, miscellaneous non-degree programs in business and other technical schools not usually regarded as collegiate institutions. The percentages of withdrawals who entered the major state universities, teachers colleges, private institutions, and junior colleges did not change very much from the first to the second follow-up study. The major changes were a reduction in the percentage which transferred to the other state universities, an increase in the percentage which entered graduate professional schools, and the inclusion of students who enrolled in extension and other non-resident programs.[4]

Most of the withdrawals who re-entered junior colleges had transferred to the four-year institutions at the sophomore level. Most of these students had withdrawn of their own accord, sometimes anticipating failure if they persisted further. Thus they could earn additional junior college credit if they withdrew before completing their sophomore year in the four-year colleges. Most of the dropouts who re-entered junior colleges after having transferred as juniors had been dismissed for poor scholarship from the four-year colleges. These students could not earn additional junior college credit for two reasons: they had already attained junior standing and were not allowed to transfer junior college credit beyond that point, and they could not transfer credit earned at another college while under dismissal from the first, under any circumstances. Nearly half the students who transferred to the junior colleges had been enrolled in major state universities, 20 per cent in other state universities, and the remainder in about equal numbers in the other three types of colleges.

Success after Transfer

More than three-fourths of the dropouts who transferred to four-year colleges persisted to graduation or through the follow-up period. About 45 per cent graduated before the fall of 1963 and less than five per cent of those who were still enrolled had averages below C. Only five per cent were dismissed for poor scholarship, although about one-third had dropped out of the previous college as a result of academic dismissal. The remaining students who withdrew were eligible to re-enroll but sometimes elected to seek re-admission to the college from which they had withdrawn earlier. Thus the record of persistence of the dropouts who transferred to four-year colleges is rather good, especially when one considers the speed with which many completed their baccalaureate degree programs. Students who had been dismissed were often required to remain out of college for one or more semesters before being considered for admission. Others lost time because of financial or personal problems which had led to their withdrawal from the first institution. The potential of 75 per cent graduation compares very favorably with the graduation rates for the institutions to which the junior college students transferred in 1960.

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[4] The inclusion of such students was admittedly somewhat arbitrary when the programs were offered by the colleges from which the students withdrew. The decision to do so can be defended on the grounds that the colleges identified these students as dropouts and that their "transfer" would have been unknown if the students had not themselves reported it. Many of the transfers to professional schools were regarded as dropouts only because they were so identified by their undergraduate colleges as having withdrawn before receiving their baccalaureate degrees. Not included in the analysis were the "near-graduates" who were completing one or two remaining degree requirements by correspondence or in extension, although they were also classified as dropouts by their colleges.

Statements of standing were secured from the graduate professional schools to which the students transferred before receiving their baccalaureate degrees. The reports showed that only two students withdrew from their programs, both with satisfactory grades. Furthermore, a number of the statements included the comment that the student in question was earning grades which were above average or that he ranked in the top half or quarter of his class. The largest number of students were in schools of dentistry, with others in schools of medicine and law. There was about equal representation in professional schools associated with the universities which participated in the main phase of the study and with other state and private institutions. The findings concerning the success of junior college transfer students in the professional schools cannot be regarded as definitive for several reasons. First, it might be expected that a larger number of transfer students would enter these schools after receiving their baccalaureate degrees than at the end of their junior year. It is believed that the practice of requiring the completion of the degree might be applied more often to junior college transfer students than to natives who had completed all their work in one college, in order to validate the junior college grades. No attempt was made to locate the graduates who entered professional schools since the scope of the investigation was limited to a three-year follow-up at the baccalaureate degree level. A second reason for believing the findings to be rather limited is that relatively few universities which participated in the study had graduate schools of medicine, dentistry, and law attached to them. It seems likely that junior college students who planned to seek admission to such schools would transfer to the institutions which had such schools for their upper division programs, rather than to an intermediate institution. However, the findings are quite clear that some junior college students were admitted to professional schools before completing their undergraduate degree programs and that they performed very satisfactorily during the first year or two in the programs.

The success or failure of dropouts in junior college and extension (or other nonresident) courses was not analyzed since their programs were limited and their persistence was expected to be of short duration. The success of these students in gaining re-admission to degree programs and their subsequent record in such programs was believed to be of greater importance than the grades they earned while out of residence. Seventeen of the 53 students who re-entered junior colleges were later re-enrolled in the four-year institutions from which they had withdrawn earlier. One of the 17 had been dismissed prior to his junior college enrollment period and was dismissed a second time from the four-year college.[5] Ten of the 17 were successful in the last phase of the pattern of attendance which involved junior college to four-year college to junior college to four-year college. Five students graduated and five were still enrolled at the end of the follow-up period. Five of the "unsuccessful" students withdrew once more of their own accord and two were dismissed from the four-year institutions. No evaluation is possible for the two-thirds who did not re-enroll in four-year colleges during the follow-up period, to know whether the additional experience in junior college was worthwhile. However, from the various analyses of performance data the implication seems clear that students would be well advised to complete their junior college programs before transferring to four-year colleges, rather than gamble on returning to the junior college for additional work after a failure experience at the sophomore level.

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[5] One might infer that transfer students who are dismissed from four-year colleges have little probability of gaining readmission by attending a junior college. However, this does not deny the so-called repair function of the junior college for students who fail as freshmen in the four-year colleges.

The success of withdrawals who enrolled in extension or other non-resident programs appears to have been somewhat greater than that of the junior college group, although the former group included a much higher percentage of students who had been dismissed for poor scholarship. The final enrollment check showed that 40 per cent of the dropouts who were enrolled in extension and other programs later re-enrolled as resident students in the four-year colleges and persisted to the end of the study. Nine per cent of the group graduated, most of them at the end of the three-year follow-up period. The record of the dropouts who were dismissed and who withdrew voluntarily was about the same, i.e., approximately 40 per cent of each group re-entered four-year colleges and was apparently successful. Only one student re-entered and was dismissed a second time. It is possible that a number of students continued to take courses in non-resident programs since few appeared to have earned the maximum amount which could be applied toward their degrees. Others may have been admitted to resident programs in other four-year colleges subsequent to the questionnaire follow-up, although the number was probably small.

Summary

The three-year follow-up of the students who transferred from junior colleges produced the finding that 62 per cent of the group received their baccalaureate degrees from the colleges which they entered after junior college. In addition, nine per cent were still enrolled in the fall term of the fourth year and presumably would graduate within a short period of time. While 29 per cent of the group did not complete their baccalaureate degree requirements before withdrawing, only 10 per cent withdrew as a result of dismissal for unsatisfactory scholarship. A number of dropouts for both personal and academic reasons were admitted to other colleges where they completed degree programs. Therefore a conservative estimate of the total percentage of the study group who might be expected to receive their baccalaureate degrees from any four-year institution within a period of about five years after transfer is 75, including the small group which entered professional schools before graduation. At the other extreme, the percentage of students who could not have continued their studies at some four-year college because of poor scholarship was very small since a number of the colleges permitted students who had been dismissed from the major universities to transfer under certain conditions.

. The total number of students in the attrition group who entered other colleges could not be determined since fewer than half the group complied with a request for information about their activities after withdrawal. Enrollment in other colleges was verified for 17 per cent of the attrition group, or nearly half the respondents. The withdrawals who transferred to four-year colleges in degree programs were quite successful in that three-fourths of the group either graduated or persisted to the end of the follow-up period. Both voluntary withdrawals and students who were dismissed were among the transfers, in numbers which were proportionate to their representation in the total attrition group.

CHAPTER 3

SELECTED ANALYSES OF THE PERFORMANCE OF NON-GRADUATES

Introduction

Analyses of performance in the original study were concerned primarily with relationships between the characteristics of the students and their achievement in the four-year colleges, and with differences among the colleges in both grades earned and graduation or attrition rates.[1] No inquiry in depth was made into the reasons why students did not graduate on time or into the areas in which they experienced failure. Only 45 per cent of the students who transferred with junior standing graduated two years after transfer and about half of those who did not do so were still enrolled for another semester or year. In the second study, an analysis of the records of the delayed graduates was undertaken in an attempt to clarify the circumstances which surrounded the rather low rate of "on-time" graduation. The records of the transfer students who withdrew in poor standing were also analyzed in order to find out whether they showed any pattern of failure in particular subject areas or courses. Analyses were made for a small number of institutions with high attrition rates, in which such patterns were thought to be most likely to appear.

Analysis of Delayed Graduation

Reasons for failure to graduate within two years after transfer at the junior level were considered to be of particular importance in the analysis of performance because of the economic implications for the students, their families, and, in the case of the public colleges, the taxpayers who are supporting the programs. The transcripts of nearly 2,000 students who did not graduate on time were examined in some detail in an attempt to identify the major reasons for their failure to do so. The students had all transferred with a sufficient amount of credit to make their graduation two years hence seem feasible in most programs. Furthermore, all were full-time students during at least the first regular term after transfer. The follow-up included the summer sessions after the second year, in order to give the students additional time in which to complete their degree programs. It was expected that the major reasons for failure to graduate on time would be:

1. Grades which were high enough to permit a student to continue in college but, nevertheless, unsatisfactory in terms of standards for graduation;

2. An insufficient number of attempted and/or earned units in the various four-year programs;

3. Enrollment in five-year programs, notably in engineering.

The records of students who did not graduate in 1962 were examined first, to find out whether one or more of the three reasons was applicable. Those which could not be explained in terms of these reasons were analyzed further in an attempt to find additional reasons for delay in completing graduation requirements. The analysis was carried out for individual colleges, rather than groups of institutions, in order to try to identify institutional patterns. A large part of the analysis was devoted to the major state universities in which the problem of delayed graduation was most severe and where the reasons were least obvious.

Unsatisfactory Grades

Most of the four-year colleges which participated in the study required their upper division students to have earned cumulative grade-point averages of at least C in order to enroll in the senior year and to receive the baccalaureate degree. However, an analysis of the transcripts of the students who failed to graduate on time showed that 19 per cent were still enrolled as seniors with averages slightly below C. The percentage ranged from 15 for the technical institutions, as a type, to 24 for the teachers colleges. It was somewhat surprising to find that such a large percentage of the non-graduates were permitted to persist with unsatisfactory grades. The percentage varied quite widely among the colleges as a function of their retention standards and of the general level of performance of their transfer students.

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[1] Cooperative Research Project No. 1133. D. M. Knoell and L. L. Medsker, Factors Affecting Performance of Transfer Students from Two- to Four-Year Colleges: With Implications for Coordination and Articulation. Center for the Study of Higher Education, University of California, Berkeley, 1964.

The relatively high percentage of non-graduates with low grades at the teachers colleges may have been the result of their somewhat flexible retention policies. In at least one institution, the junior college grades were included in the computation of the cumulative averages which were used in making decisions about the retention of students with unsatisfactory semester grades. At the same time, there was less tendency for the teachers colleges to dismiss students automatically after two poor semesters than was true for the major state universities, where 19 per cent of the non-graduates had averages below C. Many university students had earned grades somewhat above C during their first year after transfer but dropped below C and were placed on academic probation at the end of their senior year. Still others exhibited quite uneven patterns of performance after transfer which were not poor enough to result in their dismissal but which included unsatisfactory averages and probationary status from time to time. Most of the academic dismissals at the end of the senior year occurred among students who had been dismissed and reinstated once before.

Most of the seniors whose grades were poor also lacked a sufficient amount of credit to graduate two years after transfer. More than half of those with shortages had attempted a sufficient number of units but either failed particular courses or withdrew from them without receiving credit. Another large group had a break in their enrollment after transferring to the four-year colleges, thus reducing their opportunity to earn enough units to graduate on time. The major state universities had the largest numbers of non-graduates with both grade-point and unit deficiencies. One might reasonably infer from the findings that unsatisfactory scholarship was only one deterrent to on-time graduation and that students with low averages also tended to lack a sufficient amount of credit as a result of sporadic attendance or other irregular enrollment patterns.

A number of the participating institutions had other scholarship requirements for graduation which were in addition to the C average after transfer. These requirements included an overall C average (or, in some cases, C+ or better) in the major field, in upper division courses, and/or in the last semester before graduation. Furthermore, some required a grade of C or better in each course in a particular sequence in the major, e.g., in professional education courses. Because of the complexity of the requirements, the formal analysis of data was limited to the overall average earned after transfer. However, a somewhat cursory inspection of the transcripts showed that the number of students who had satisfactory overall averages but who failed to meet other grade-point requirements was relatively small.

Deficiency in Amount of Credit

The number of transfer students whose graduation was delayed because of credit deficiencies was about four times larger than the group whose grades were below the standard required for graduation. Most of the group with credit deficiencies had simply earned less than the minimum total amount of credit required for a degree in the various major fields, largely as a result of having taken a relatively light course load during one or more semesters. They were by definition full-time students during the entire two-year period after transfer, i.e., enrolled for at least 12 units each term. However, at this rate they would have needed at least one more semester at the four-year college, in order to complete the 60 units which were a fairly common graduation requirement of the participating institutions. Some who failed to earn enough credit to graduate on time had dropped down to part-time enrollment at some point after transfer, while others withdrew from some of their courses without dropping out of college. Only 15 per cent withdrew completely for one or more semesters. Thus, the typical transfer student who failed to graduate on time had been in continuous attendance as a full-time student, with satisfactory grades, but with too few units per semester to be able to accrue in two years the minimum number required for graduation.

The teachers colleges yielded the largest number of exceptions to the typical pattern of slow progress through the upper division. The percentage of their non-graduates who had earned both satisfactory grades and a sufficient amount of credit to graduate was nearly twice as high as the percentage found for the total transfer group. A majority of the teachers college group failed to graduate on time because they lacked some specific course requirement, often student teaching. Their students were also somewhat more likely than others to be delayed by poor grades which resulted either in cumulative averages which were below the standard required for graduation, or in large discrepancies between the numbers of units attempted and earned, or in both. Furthermore, the non-graduates at the teachers colleges included a larger proportion of temporary dropouts than was found at the other types of colleges.

An attempt was made to obtain a fairly accurate estimate of the total amount of credit required for graduation in each of the broad fields offered by the various colleges, in order to find out whether delayed graduation was more characteristic of some majors than of others. A tabulation of the majors of the non-graduates with satisfactory grades and a sufficient amount of credit to graduate showed that about 29 per cent were in the liberal arts, 22 per cent in elementary education, 17 per cent in science and mathematics, 13 per cent in business administration, six per cent in agriculture and related areas, five per cent in engineering, and the remainder in various applied fields. The percentages are only approximate because of the vagueness of many catalog statements concerning degree requirements for particular majors. However, for the study group as a whole, the analysis seems to show that students in the various majors had about the same probability of delay in completing specific graduation requirements.

Special attention was given to the transcripts of the engineering majors because of the relatively large number who were still enrolled in the state universities and technical institutions at the end of the two-year follow-up period. A review of the term-by-term outlines of the engineering curricula in the various college catalogs showed that only three institutions presented them as five-year programs. The remainder were outlined as *four-year* programs requiring at least 132 semester units, compared with about 124 in the liberal arts fields. A few programs included one or two summer sessions as part of the four-year sequence. Analysis of the student transcripts showed that about 20 per cent of the non-graduates in engineering were enrolled in five-year programs and thus had little probability of graduating two years after transfer. Of the students in the so-called four-year programs, all but eight per cent had satisfactory grade-point averages for their work after transfer. However, 86 per cent failed to earn the required amount of credit for the baccalaureate degree in engineering. Twenty per cent appear to have attempted enough units but failed one or more courses which were required in the major. Thus, the engineering students were somewhat less likely than students in other majors to be delayed because of overall poor scholarship, and somewhat more likely because of their inability to complete the total program in two years after transfer.

Curriculum Factors

A further analysis was made of the transcripts of non-graduates at 17 institutions who appeared to have earned both satisfactory grade-point averages and the required amount of credit for graduation, in order to find other factors in particular programs which might account for their delay in obtaining the degree. The analysis was limited to colleges with specific prescriptions of graduation requirements for each major. A preliminary examination of the transcripts showed that about 20 per cent of the non-graduates who appeared to have been eligible to receive their degrees were delayed by a change in major after transfer which resulted in the imposition of additional course requirements for graduation. Since credit was not deducted from their records when they changed their major, the total number of units they were required to earn was increased in relation to the additional course requirements which were imposed. Most of the changes in major were between schools and colleges on particular campuses, rather than between departments or options within a major field. There was no apparent pattern in the changes, except for a small increase in the number of majors in business administration.

Lack of articulation with the junior colleges appeared to cause some delay in the progress of transfer students with particular majors at a number of the four-year colleges. About 10 per cent of the non-graduates were in specialized majors in which the junior colleges did not ordinarily offer the one or two basic courses which should have been taken in the lower division. These majors included forestry, landscape architecture, agronomy, and industrial design. Teacher education students with majors in art, music, industrial arts, and other specialized fields were also handicapped in some instances by having attended a junior college which did not offer the breadth of courses which the four-year colleges expected them to have during their first two years. Students in elementary education who were required to have one or two basic courses in these fields had comparatively little difficulty in obtaining them in junior college.

Among the majors which attracted the largest numbers of transfer students, business administration and elementary education posed problems for students transferring to some four-year colleges. At two major state universities, the programs in business administration were so rigidly prescribed that many students were unable to complete all lower division requirements in the junior college and thus were not ready to embark upon the upper division sequences of courses when they transferred. The problem was further complicated by a lack of agreement among the several four-year colleges to which students might transfer concerning the courses they were expected to take in the lower division. Requirements which caused the most concern included lower division courses in business and economics in some programs, and in higher mathematics in others. At some four-year colleges the transfer students could not work out class schedules which would enable them to complete in two years the various required sequences of two-semester courses in business or other upper division core requirements. Fundamental changes appeared to be taking place in the business administration curricula offered by some of the major universities which made articulation with the junior college programs very difficult for at least two reasons. First, the changes were somewhat experimental and could not be adopted by the junior colleges in time to insure that their students had the same preparation as those who attended the universities as freshmen. Problems of sequence and continuity characterized the changes in both the business courses and in the preparation in mathematics and economics which transfer students were expected to have. The second reason for problems in articulation was the lack of change in the business curricula offered by the other four-year colleges to which students also transferred. The strong interest of the junior colleges in business as a terminal vocational program was also a factor in articulation. Thus, during this era of change, the junior colleges faced major problems both in counseling their students about programs in business administration and in offering different types of preparation for students with varying educational and occupational goals.

In teacher education, two somewhat unrelated problems appeared to delay transfer students in their completion of degree requirements. First and most prevalent was the problem of scheduling student teaching assignments which required large blocks of time, usually away from the campus. A large percentage of the non-graduates either were unable to schedule their student teaching course during the first two years after transfer or neglected to take other required courses while carrying out their student teaching assignment. The second problem which characterized the students in teacher education to a greater extent than students in other majors was their receipt of passing but unsatisfactory grades in required professional courses. Students whose graduation was delayed for this reason had grade-point averages of C or better but were not permitted to graduate because of poor grades in specific professional courses in the degree-plus-credential programs.

Other Factors

The transcript analysis for the non-graduates yielded several additional factors which appeared to delay the graduation of a sizeable group of transfer students. They are:

1. A number of four-year colleges required both native and transfer students to satisfy an English proficiency requirement after they attained junior standing. In some cases the examination was required only if a grade of C or less was earned in freshman composition courses. Most colleges offered advanced remedial work in English for students who failed the examination and imposed further penalties if the remedial course was also failed. Some near-graduates failed the examination only once after transfer while others failed both examinations and courses in English composition, both before and after transfer.

2. Transfer students who failed to complete their general education programs before leaving junior college were sometimes denied admission to the school in which

their major was offered and were assigned, instead, to a general, lower division college. The problem was most severe at the universities which required very specific general education courses, rather than mere breadth. The specific courses often served a screening function for the masses of native freshmen and, in so doing, delayed the progress of some students who should have transferred as juniors.

3. At some four-year colleges there was a tendency toward a rigid prescription of degree requirements, including the specification of so-called elective courses. As a result, transfer students had the experience of receiving full credit for their junior college courses but, at the same time, being required to enroll in other courses designed to satisfy highly specific, local requirements for graduation.

Analysis of Sources of Failure

An attempt was made to identify particular courses and subject-matter fields in which large numbers of students who withdrew with poor grades had experienced difficulty after transfer. Seven institutions with comparatively high attrition rates were selected for special study, including four major state universities and three teachers colleges. The transcripts for the dropouts were analyzed in some detail in order to find out the incidence of poor and failing grades in various courses, by level and subject area, and on English proficiency examinations which were required for graduation. In some instances, comparative data were obtained for students who had persisted and graduated.

Several patterns of failure were found in the analysis of the records for the institutions with high attrition, which would probably be characteristic of universities with low attrition as well. First, the performance of the dropouts on English proficiency examinations which were required at the junior level was considerably poorer than that of the students who persisted and graduated. At one university which required the examination, an exemption was granted to students who had earned grades of A and B in their freshman composition courses. The analysis showed that fewer than half the dropouts were granted the exemption, compared with 70 per cent of the graduates. Among those who were required to take the examination, the percentage of graduates who passed was nearly three times greater than the percentage of dropouts. Students who failed the examination were required to earn a passing grade in an advanced course in remedial English or to take a re-examination at a later date. All graduates of necessity satisfied the proficiency requirement in one way or another but only four per cent of the dropouts did so before withdrawing. The findings for a second university which had a similar requirement were somewhat comparable. Only one-third of the dropouts satisfied the English proficiency requirement while they were still enrolled. However, 74 per cent of the graduates and 60 per cent of the non-graduates who persisted met the requirement during their first year after transfer. While no causal relationship can be inferred between a lack of proficiency in English and unsatisfactory grades after transfer, the poor performance of the dropouts on the examination appears to be symptomatic of their more general academic disability. Failure to meet the proficiency requirement delayed the graduation of some transfer students whose records were otherwise satisfactory. However, the incidence of failure in the dropout group was much higher than among the students who were still enrolled for a third year after transfer.

A second pattern which emerged from the transcript analysis involved the level of the courses which the dropouts failed. In each analysis, the proportion of poor and failing grades received in general education courses, or in other courses offered at the freshman and sophomore levels, was considerably larger than the proportion received in courses at higher levels. At two universities, about half the poor grades were in courses normally taken by freshmen and sophomores, which the dropouts took after transferring as juniors. The particular courses which were most difficult for the dropouts varied among the universities studied. At one institution, nearly one-third of the dropouts received D or F grades in the required humanities course in the general education sequence which involved integrated study in literature, philosophy, religion, and the arts. Nearly one-fourth of the dropouts received poor grades in a required sequence in biological science, in which students who persisted also experienced some difficulty.[2] At other universities, the "problem" courses at the lower division level which transfer students were often required to take included English and the humanities, particularly beginning courses in foreign language; introductory courses in science, particularly general physics; and sophomore courses in engineering. The findings seemed to show that students who planned their junior college programs with enough care to be able to start their upper division work immediately after transfer, without making up deficiencies, were more likely to succeed than students who had to compete with native students in lower division courses. Some of the students who failed to graduate on time also experienced difficulty in required lower division courses and were thus delayed in completing their requirements. However, the incidence of their enrollment in such courses was considerably lower than the incidence of the enrollment of the dropouts.

The analysis of records of the dropouts from the teachers colleges produced patterns of poor grades which were rather similar to those found for the universities. A large proportion of the poor grades were earned in lower division courses, most of which could have been taken before transfer. At each of the colleges, about two-thirds of the poor grades were earned in liberal arts courses which were taken to satisfy general education requirements. The particular courses which proved to be obstacles to the transfers varied with the college studied. A required course in geology-astronomy resulted in poor grades for half the attrition group at one college which had a rather rigidly prescribed general education program. Beginning courses in sociology were found to be a major source of poor grades at still another college, perhaps as a result of the relatively poor language ability of the dropouts. At two of the three teachers colleges for which records were analyzed, courses with high verbal content tended to cause more trouble for the dropouts than beginning courses in science and mathematics, although both types of courses were required in the general education program.

The colleges differed markedly with respect to the performance of the dropouts in professional education courses. At one college a relatively large number of the dropouts received poor grades in courses in elementary curriculum and the history and philosophy of education, as well as in general education courses. At a second, none of the poor grades was received in professional education courses, although most of the dropouts transferred at the junior level and presumably were enrolled in professional courses at the time they withdrew. Only one-third of the dropouts from the third teachers college analyzed were in teacher education programs. Another one-third of the dropouts had non-teaching majors in business and the remainder were in various liberal arts fields. The dropouts with majors in business appear to have earned a rather high proportion of their poor grades in their major, some of which should have been taken at the junior college. Native students were expected to take their first courses in business as freshmen. It was these elementary courses which produced a large share of the poor grades earned by the transfer students who dropped out.

Summary

An attempt was made to discover reasons for the delay in graduation which was experienced by nearly 2,000 students who transferred from junior college with junior standing but who failed to graduate within two calendar years after transfer. Grade-point averages, amount of credit, and satisfaction of degree requirements in particular majors were all examined as possible causes of delay. Enrollment in five-year programs in engineering and related fields was an obvious reason for delayed graduation but accounted, actually, for fewer than five per cent of the non-graduates. Fewer than 20 per cent of the non-graduates had cumulative averages below C at the end of the second year after transfer, which would have kept them from graduating from all but a few of the participating colleges. Most of the students with unsatisfactory grades also lacked both the necessary amount of credit and specific course requirements for graduation. Of the non-graduates whose averages were C or better, 78 per cent had not earned at least the minimum amount of credit required for graduation with particular majors. Only 15 per cent with such a shortage had attempted enough units to graduate two years after transfer. Thus, most of the students who did not graduate on time simply lacked enough credit to do so, as a result of reduced course loads and, in a small number of cases, course failures or repetitions.

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[2] A number of students reported in interviews that they had passed this particular hurdle by taking a summer session course in junior college after their first year at the university, for which they could not receive unit credit but which satisfied the graduation requirement.

An analysis was also made of the transcripts of dropouts from a small sample of colleges with high attrition rates for transfer students, in an attempt to identify particular courses or patterns of courses in which there was a high incidence of poor grades. An analysis was also made of their record in satisfying English proficiency requirements. The dropouts were found to have made a disproportionately high number of poor grades in general education courses and other lower division courses which could have been taken in the junior college. Specific courses which proved to be obstacles for transfer students differed for the various colleges included in the analysis, although courses in foreign language and English composition appeared to be a common source of poor grades at a number of institutions. The dropouts also were much less successful in satisfying proficiency requirements in English at the junior level than the transfer students who graduated or who persisted to the end of the study. It is possible that many of the dropouts had some verbal deficiency since the transcript analysis showed a comparatively high incidence of poor grades in courses with high verbal content.

CHAPTER 4

ACADEMIC ABILITY OF THE TRANSFER STUDENTS

Introduction

Relatively little attention in research has been given to the performance of transfer students on academic aptitude and achievement tests, or to the relationship between test results and success after transfer with advanced standing. However, a considerable amount and variety of test score data are available which have been obtained for purposes of counseling and placement. Most junior colleges require their entering freshmen to take one or more standardized tests as part of the admissions-orientation procedures. A number of the four-year colleges which participated in the transfer study also administered aptitude and placement tests to the transfer students at the time of their admission, often without any clearly defined purpose in mind in doing so.[1] Until now, standards for the admission of transfer students have been based almost exclusively on the grade-point average earned in junior college, particularly when transfer took place between public institutions. However, there is reason to believe that, in the future, testing may assume a more important role in the admission, evaluation, and placement of transfer students, particularly as admission at the freshman level becomes more competitive and hence more selective. The recent move by the College Entrance Examination Board in establishing a Council on Examinations of Collegiate Achievement is but one indicator of the current increased interest in standardized testing during college.

The direction which college testing will take in the future, beyond the initial selection and placement of freshmen, is not entirely clear. At issue is the use of results of standardized testing programs in making decisions about both native and transfer students as they move through their degree programs, particularly at the point of entrance into the upper division. One possible use of test results for transfer students is the screening of applicants for admission with advanced standing, using as a standard the same minimum aptitude score required for admission at the freshman level. If a college or university expects its freshman applicants to present aptitude test scores within a certain range, one might raise the question of the desirability of screening transfer applicants on the same basis, regardless of their performance in the junior college. If academic aptitude tests are to be used for this purpose, more research is needed on the question of gains in test score performance during college.[2] A second suggested use of test results for transfer students involves the validation of credit earned in general education courses taken in junior college, particularly when the nature of the junior college program is quite different from that offered by the four-year college granting the credit. Finally, standardized tests might be used at the time of transfer for the demonstration of proficiency in writing and other basic skills. Under ordinary circumstances, achievement-type tests would also be administered to native students at the end of their sophomore year, as a condition for entrance into the upper division. In this case the purpose in giving the examinations would be the evaluation of achievement in rather broad areas of lower division instruction, rather than validation of credit on a course-by-course basis.

An extension of the use of achievement testing involves the awarding of credit for courses in which students do not qualify on the basis of past performance. For example, institutions which do not award transfer credit for courses in which grades of D were earned might permit students to qualify for credit on the basis of test performance. Transfer students might also gain credit by examination for courses which are not regarded as equivalent by the four-year colleges, e.g., junior college courses taught by the university at the upper division level. Finally, these same test results might be used to place transfer students at the appropriate level in their major, e.g., in engineering, where lower division preparation might differ in the two types of institutions. Both native and transfer students might be permitted to earn credit by examination in areas in which they have not had formal courses, e.g., foreign language learned while traveling abroad.

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[1] Cooperative Research Project No. 1133. D. M. Knoell and L. L. Medsker, Factors Affecting Performance of Transfer Students from Two- to Four-Year Colleges: With Implications for Coordination and Articulation. Center for the Study of Higher Education, University of California, Berkeley, 1964, pp. 167-169.

[2] See Joshua A. Fishman, 1957 Supplement to College Board Scores No. 2, for a report of research on changes in Scholastic Aptitude Test scores. (New York: College Entrance Examination Board, 1957, pp. 40-44.)

It may be argued that the use of tests would expand opportunity for transfer students, while increasing the freedom of the two-year colleges to experiment with curriculum and instruction without endangering the transfer value of their courses. Benefits to transfer students might be expected to accrue both from opening up spaces in institutions which previously did not accept students with advanced standing, and from their being freed from having to follow a rigidly specified transfer program in junior college. Too, students in vocational programs who would ordinarily be terminal might also benefit from an increased use of standardized testing, by qualifying for transfer and receiving degree credit for their achievement in the lower division, in spite of their early decision not to transfer. The major argument against transfer testing is that students who have demonstrated their ability to do satisfactory work in accredited collegiate institutions should be allowed to go on, and to transfer appropriate credit, regardless of their intellectual capacity as revealed by test scores. While little work has been done at the transfer level, research at the freshman level has shown quite consistently that performance in college preparatory courses is a better predictor of success in college than test scores, although test scores may improve prediction.

It seems reasonable that the contribution of test score data in the prediction of performance after transfer would be less than its contribution to the prediction of freshman performance. This reasoning is based on the assumption that the junior college is serving a leveling function for both high and low ability students whose high school grades were not commensurate with their ability test scores. Thus, students who could not qualify for freshman admission to four-year colleges because of poor high school grades, but who had good potential for college in terms of their native ability and motivation, might be expected to earn junior college grades which would make it possible for them to transfer to four-year colleges. Similarly, over-achievers in high school might do relatively less well in junior college, as competition for grades increased and as greater demands were made upon their cognitive skills. Still one further reason to question the efficacy of the testing of transfer students for predictive purposes is that the students are moving into their major fields at the time of transfer, presumably into courses in and for which they have their greatest interest and aptitude. Since the various majors often require quite different types and amounts of ability, general aptitude and achievement tests appear to have somewhat limited usefulness for prediction at this level.

However, the major issue in the testing of transfer students appears to be whether students who have earned satisfactory grades in junior college should be denied an opportunity to transfer if their test scores indicate that they should not have succeeded in a transfer program. A related issue is whether students who have earned satisfactory grades in transfer courses in accredited institutions should be denied transfer credit on the basis of their test scores and, if so, what constitutes satisfactory test performance.

Questions To Be Answered

A considerable range of test data was collected under widely varying conditions in the present study. Since there was no common testing program involving a large number of the participating institutions, the data can throw light on only a few of the questions and issues related to the testing of transfer students. The major question which the analysis was designed to answer is the degree to which test score performance was related to success after transfer to particular four-year colleges. Success in the four-year colleges was defined as enrollment status two years after transfer, i.e., graduated, still enrolled, or dropped out. The question of the relationship between test performance and success in college included some inquiry into the effect of the time of testing on the relationship and the relative efficacy of different types of tests in distinguishing among the successes and failures after transfer. In addition, an attempt was made to gain some insight into sex differences in performance, differences among types of institutions, and differences among institutions with widely varying attrition rates.

Test results were used from programs which included both standardized tests such as those offered by the College Entrance Examination Board and the Cooperative Testing Service, and locally devised placement tests. The types of tests used in various programs might be categorized as academic aptitude; basic skill, e.g., reading, spelling, arithmetic; and general achievement in subjects, e.g., social science and mathematics. The aptitude tests varied in their degree of dependence upon actual achievement, from the American Council on Education Psychological Examination, which is in a sense a measure of "unlearned" ability, to the College Qualification Test, which includes a section on information, as well as numerical and verbal sub-tests. Time of administration was a variable in the overall analysis. Testing at the twelfth grade level, testing at the time of admission to college at the freshman level, and testing as part of the procedures for transferring to a four-year college were all represented in the sample of programs included in the analysis.

Analysis of variance tests were made of the differences in mean test scores earned by graduates, dropouts, and students who were still enrolled two years after transfer, for each of 10 participating institutions. Separate analyses were made for men and women.[3]

Overall Findings Concerning Performance

A brief summary of the findings for the 10 institutions for which test data were analyzed is given in Table 8, in an attempt to give an overall picture of the relationship between test performance and success after transfer. Only 16 of the 96 analysis of variance tests produced values of F which are significant at the .05 level or better. With one minor exception, the significant differences were all obtained in tests made for four colleges in two states. Three of the four institutions had relatively high attrition among their transfer students, in comparison with other institutions of the same type. Most of the attrition was among students with poor or failing grades. In one of the states, students with very similar junior college grades transferred to quite different types of four-year colleges which had widely varying grade-point differentials. It appeared that neither counseling nor screening had occurred at the point of transfer, with the result that the test score performance of the junior college students was related to their success after transfer. In other states, where junior college students tended to sort themselves out into appropriate four-year colleges on the basis of their junior college grades, test performance was found to be much less likely to be related to success after transfer.

In the second state in which significant results were obtained, freshman applicants to the state universities were screened on the basis of their total scores on a twelfth-grade test battery. Transfer students, on the other hand, were admitted solely on the basis of their junior college performance, irrespective of their twelfth grade scores. While total scores on the test battery were not significantly related to performance after transfer to either university, scores on the academic aptitude test were so related for the samples of transfer men at both institutions. While a number of students with fairly low test scores succeeded at each university, the probability was quite high that students with scores below the freshman cutting score would drop out before completing their baccalaureate degree requirements.

The findings from the analysis for the ten institutions thus appear to show that test data may, under certain circumstances, contribute to the prediction of success after transfer but that good counseling and screening on the basis of junior college grade-point achievement

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[3] Correlations between test scores and grade-point averages were not computed for several reasons. First, the assumption was made that, given a sufficiently large sample, a small but statistically significant correlation would be found which would contribute relatively little to our understanding of transfer student performance. However, the sample of students for whom test scores were available was quite small at most institutions. Differences among institutions in student performance and differences between sexes in mean test scores made the pooling of data for different samples appear indefensible. Perhaps the most important reason for neglecting the correlation analysis was the assumption that provision will be made for all students to transfer who can make satisfactory grades, in one four-year college or another, and that gradations in averages above C are thus of relatively little consequence in the present context. The analysis of academic status after transfer was expected to provide an index of the relationship of test scores with grades since most students with averages below C were no longer enrolled, and since the students who graduated on time earned higher grades than those who were still enrolled.

Table 8

Summary of the Findings Concerning the Relationship Between Test Performance and Success after Transfer*

Type of College	State Code	Time of Testing	Type of Test	Number of Significant F Values	Per Cent Attrition
Major state university	A	Transfer	Aptitude	1 of 6 tests	27
	B	Transfer	Aptitude	0 of 6 tests	24
	C	Freshman	Aptitude	0 of 6 tests	22
	D	Twelfth grade	Aptitude	1 of 2 tests	34
			Subject	1 of 8 tests	
			Total score	0 of 2 tests	
	F	Freshman	Aptitude	0 of 10 tests	18
			Skill	0 of 10 tests	
			Mathematics	*0 of 2 tests*	
	G	Transfer	Aptitude	3 of 6 tests	38
			Skill	2 of 8 tests	
			Mathematics	2 of 2 tests	
Other state university	E	Twelfth grade	Aptitude	1 of 2 tests	14
			Subject	2 of 8 tests	
			Total score	0 of 2 tests	
	H	Transfer	Aptitude	0 of 4 tests	19
			Skill	0 of 2 tests	
Teachers college	J	Transfer	Aptitude	1 of 2 tests	25
			Reading	2 of 2 tests	
Technical institute	K	Freshman	Aptitude	0 of 3 tests	41
		Transfer	Subject	0 of 3 tests	

*Success was defined as enrollment status two years after entering the four-year college, i.e., graduated, still enrolled, or dropped out.

tend to diminish the usefulness of test results in prediction. Tests of differences in mean scores earned by the men produced a larger number of significant values of F than the tests of means for the women. Since larger numbers of men than women attended junior college as freshmen because of poor high school grades, and then earned lower grades than the women in junior college, it was not surprising to find that some of the variance in their test scores was related to performance in the four-year colleges. There was no evidence in the findings that either type of test used or time of testing was a significant factor in the overall analysis of the relationship between test performance and success after transfer.

Detailed Findings for Particular Institutions

Mean test scores, standard deviations, and the results of analysis of variance tests are presented for each institution in the following sections, for students grouped on the basis of their enrollment status two years after transfer. The results of the significance tests show primarily that in most of the analyses the variance within the enrollment groups, i.e., graduated, dropped out, and still enrolled, was about as large as the variance between groups, although the mean test scores for dropouts were in many instances lower than those of the graduates. The extent of the overlap in scores earned by the three status groups was very large. Dropouts with high scores occurred almost as frequently as those with low scores; at the same time, many transfer students graduated in spite of their low aptitude and achievement scores.

Major State University A-B

The Scholastic Aptitude Test was required for research purposes of all entering freshmen and transfer students in 1960, except engineering majors, as a condition of admission to the two campuses of this major state university. Mean scores earned by the transfer men and women on the verbal and mathematical sections of the test are given in Table 9, together with a total score equal to the unweighted sum of the two part scores. Analysis of variance tests were made to find out whether there were significant differences in the mean scores earned by the transfer students who graduated, dropped out, and were still enrolled two years after entering the university. Of the 12 tests made (for each of the three scores earned by men and women), only the mathematical score means for women on Campus A were found to produce a value of F which was significant at the .05 level. However, the mean scores earned by both men and women who were dropouts from Campus A were generally lower than those of both the graduates and the students who were still enrolled two years after transfer. This pattern did not appear in the analysis for Campus B, where the mean scores earned by the dropouts tended to be higher than those of the graduates and the students who were still enrolled.

Median verbal scores for the transfer students classified by major, sex, admissions status, and withdrawal status are given in Table 10. Differences among the various sub-groups were generally found to be larger on Campus B than on Campus A. Certain generalizations can be made about both campuses, however. First, the academic aptitude of the students who were eligible for university admission as freshmen, on the basis of their performance in high school, does not appear to have been different from that of the students who were ineligible on the basis of their high school grades or subject pattern, or both. The latter group was required to complete approximately two years in junior college with a grade-point average of 2.4 (C+) or better in order to be eligible to transfer. However, in practice students in both groups earned averages of at least 2.4 in junior college. A second finding for both campuses is that the men and women did not differ with respect to the median verbal aptitude scores which they earned. However, the men on both campuses earned significantly higher mathematical and total scores than the women. The finding was somewhat unexpected since students who majored in engineering were not included in the groups studied. The analysis also showed that the verbal aptitude of the students who withdrew with satisfactory grades did not differ from that of the dropouts with averages below C, including those who were dismissed for poor scholarship.

Median scores for majors in the liberal arts, science, mathematics, and business administration were also very similar for the two campuses. The scores of students in education and allied fields appeared to differ markedly. However, the two groups were not entirely comparable with respect to their teaching fields, none of which might be regarded as academic

Table 9

Mean Scholastic Aptitude Test Scores and Standard Deviations
Earned by Transfer Students to State University A-B,
by Enrollment Status Two Years after Transfer*

A. Campus A

Sex	Enrollment Status	N	Test Score					
			Verbal		Mathematical		Total	
			Mean	S.D.	Mean	S.D.	Mean	S.D.
Men	Graduated	122	577	82	582	99	1159	137
	Enrolled	105	570	106	604	99	1178	166
	Dropped out	98	558	89	584	100	1143	145
Women	Graduated	64	573	99	519	94	1092	152
	Enrolled	23	568	82	492	78	1060	129
	Dropped out	53	555	92	476	100	1034	163

B. Campus B

Men	Graduated	129	556	91	562	96	1116	152
	Enrolled	45	541	93	548	100	1092	152
	Dropped out	44	561	92	568	102	1129	167
Women	Graduated	49	559	108	465	73	1034	146
	Enrolled	30	534	88	452	98	985	162
	Dropped out	32	544	94	451	79	995	139

*Analysis of variance tests were performed to test the significance of the differences between means for the "status" groups, for men and women separately on each campus. Only one of the 12 values of F thus obtained was significant at the .05 level, namely, for the women on the first campus, for the mathematical score.

Table 10

Median Verbal Scores Earned on the Scholastic Aptitude Test
by Various Sub-Groups of Transfer Students
to State University A-B

Sub-Group	Campus A		Campus B	
	N	Median	N	Median
Major field:				
Liberal arts	227	586	129	585
Science or mathematics	125	557	87	556
Business administration	42	555	72	545
Education and allied fields	20	574	53	494
Fine arts	-	-	32	533
Other specialized majors, e.g., forestry, agriculture	52	572	-	-
Admissions status:*				
Eligible	241	573	150	566
Ineligible	238	570	219	548
Withdrawal status:				
GPA of C and above	101	577	40	540
GPA below C (including academic dismissals)	66	544	50	565
Sex:				
Men	335	574	247	560
Women	144	566	126	545

*Classified on the basis of their eligibility for university admission as freshmen at the time they graduated from high school.

majors. The group on Campus B was composed primarily of students in elementary education, a specialization which was not offered at the undergraduate level on Campus A. Both groups included students in physical education, home economics, and other specialized fields. The median score for the students in education on Campus B was considerably lower than that earned by students in all other majors on both campuses. A second group with a comparatively low median score on Campus B was comprised of the fine arts majors. Thus, the findings seem to show that a more heterogeneous transfer group, in terms of academic aptitude, was accommodated on Campus B than on Campus A, in a somewhat wider range of majors. One possible inference from the findings for the two campuses is that success among the transfer students was not highly dependent upon academic aptitude, at least under present admission standards and related policies, provided the student chose an appropriate major for which he had the requisite aptitude.

Major State University C

Scholastic Aptitude Test scores were also available for a large sample of transfer students from public junior colleges to State University C, who were required to take the examination prior to entering college as freshmen. Mean scores earned by the men and women are given in Table 11, by enrollment status two years after transfer. No significance tests were made for the scores earned by the men since the differences in means were not in the expected direction. The verbal and total scores earned by the dropouts were higher than those earned by the students who graduated or were still enrolled two years after transfer. The mean score of the dropouts on the mathematical section was also higher than that of the graduates but lower than that of the students who were still enrolled. The number of women with test scores who did not graduate on time was too small to warrant detailed analysis. However, large gross differences in their scores were found which were in the expected direction.

Table 11

Mean Scholastic Aptitude Test Scores and Standard Deviations Earned
by Transfer Students to Major State University C,
by Status Two Years after Transfer*

Sex	Enrollment Status	N	Test Score					
			Verbal		Mathematical		Total	
			Mean	S.D.	Mean	S.D.	Mean	S.D.
Men	Graduated	44	375	71	424	59	799	110
	Enrolled	19	380	87	463	80	844	138
	Dropped out	12	427	-	417	-	844	-
Women	Graduated	15	432	85	438	85	870	153
	Not graduated	5	343	-	356	-	699	-

*No analysis of variance tests were made since the direction of the differences obtained for the men was not as predicted, i.e., the dropouts earned higher mean scores than the graduates. The number of women in the non-graduate sample was so small that the significance test did not appear to be worthwhile.

The mean scores of the various sub-groups of transfer students to University C were all considerably below the average scores earned by a national sample of high school seniors who entered college.[4] Failure of the university to offer a major in engineering, except in the field of agriculture, may account in part for the relatively low mean scores obtained for the men, since engineering majors at most of the participating institutions tended to earn aptitude scores which were higher than those of other majors. Mean and median aptitude scores for men in the various majors which were offered by University C are given in Table 12. The pattern of scores which emerges from the table is one of rather wide variation in the aptitude of students in the different majors. The students with majors in the liberal arts earned the highest mean scores; the business administration majors, the lowest. Students in agriculture earned scores which were only slightly higher than those of the business majors. The mathematical scores of the students with majors in science and mathematics were about as high as those of the liberal arts majors, but their verbal scores were only slightly higher than those of the agriculture majors. The difference between the highest and lowest mean scores for majors was more than 100 score points on the verbal test and 74 points on the mathematical test.

Table 12

Mean and Median Scholastic Aptitude Test Scores Earned by
Male Transfer Students to State University C, by Major

Major	N	Statistic	Test Score		
			Verbal	Mathematical	Total
Liberal arts	16	Mean	453	470	923
		Median	408	458	887
Science and mathematics	10	Mean	399	474	873
		Median	356	467	872
Agriculture	10	Mean	384	400	784
		Median	380	412	824
Business administration	34	Mean	330	404	734
		Median	338	400	760

Scholastic Aptitude Test scores were not available for the large group of transfer students from junior colleges in other states, nor for transfer students from private junior colleges within the state. However, for the public, in-state junior college transfer group, the findings seem to suggest that the academic aptitude test did not distinguish among the successes and failures in the male transfer group. Furthermore, the finding of different ability levels for the different majors implied that students with a wide range of ability could be accommodated at the university, provided they selected majors which were appropriate to their levels of verbal and mathematical ability.

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[4] Your College Board Scores: Scholastic Aptitude Test, Achievement Tests. Princeton, New Jersey: College Entrance Examination Board, 1964. p. 7.

Major State University D

All twelfth-grade students in the state in which University D is located took a battery of aptitude and achievement tests before graduation, which included the American Council on Education Psychological Examination and subject tests in English, social studies, natural science, and mathematics. Scores from this program were available for a majority of the students who transferred to the University in 1960. They were expressed as percentile ranks based on the distribution of all twelfth-grade scores. A total score was also obtained for the battery, which is the unweighted sum of the five percentile scores. This total score has been used by University D in screening freshman applicants for admission. Mean scores and standard deviations are given for the transfer students in Table 13, for men and women classified in terms of their enrollment status two years after transfer. Since about one-fourth of the students transferred with only sophomore standing, the group which was still enrolled included some students who had just reached senior standing at the end of the second year, as well as those who transferred as juniors but did not graduate on time. The latter group included a large number of engineering majors whose programs required an additional year at the university.

Analysis of variance tests of the total scores failed to produce significant values of F, although the mean scores of the dropouts were considerably lower than those of the graduates and of the students who were still enrolled. The mean scores of the graduates and of the group which was still enrolled did not differ. The pattern of variability in the three groups of women is of some interest. As might be expected, the variance in the scores of the dropouts was much larger than that of the students who were still enrolled and of the graduates. It appears that some women with high scores dropped out for purely personal reasons while others dropped out with low scores, for reasons of poor scholarship. Analysis of variance tests of the five separate scores in the battery produced two significant values of F for the male transfer group, namely, for the academic aptitude and mathematics tests. The mean scores of the dropouts on both tests were significantly lower than those of the graduates and of the students who were still enrolled. None of the variance tests for the women produced significant values of F although the mean scores for the dropouts among the women were also lower than those of the two "success" groups on all tests.

The analysis of test data for State University D seems to suggest that men with low academic aptitude scores were handicapped after transfer, in spite of their satisfactory junior college grades. Their prognosis was particularly poor if they had low scores on both the aptitude and mathematics tests and intended to earn degrees in engineering. One possible implication from the findings is that the university might require transfer students with unsatisfactory twelfth-grade test scores to remain in junior college for two years before transfer and/or to earn a grade-point average above the minimum now required for transfer.

State University E

Universities D and E are located in the same state and their transfer students took the same battery of tests in the twelfth grade, before high school graduation. The mean scores and standard deviations earned by the transfer students to University E are given in Table 13, together with those of University D. Differences in mean total scores for the groups which graduated, dropped out, and were still enrolled were not significant, although the scores of the dropouts were lower than those of the other groups. The average test score of the dropouts was at about the 59th percentile, in terms of twelfth-grade norms, while the average for the graduates was at about the 68th percentile. Thus, the total score on the high school battery was not effective in distinguishing among the successes and failures after transfer to either University D or E. Analysis of variance tests of the five separate scores in the battery produced two significant values of F for the men and one for the women. For the men, the academic aptitude and English tests distinguished among the graduates, dropouts, and students who were still enrolled; for the women, the natural science test produced significant results. The mean scores earned by the dropouts were lower than those of the other enrollment groups in all comparisons except one, irrespective of the results of the analysis of variance tests.

Mean scores on the total battery are shown for students in the various major fields in Table 14. An analysis of variance test of differences in the means did not produce a

Table 13

Mean Scores and Standard Deviations Earned on a Twelfth-Grade Test Battery
by Transfer Students to Two Public Universities (D and E)
by Enrollment Status Two Years after Transfer

A. Major State University D

Sex and Enrollment Status	ACE Academic Aptitude		English		Social Studies		Natural Science		Mathematics		Total Score	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Men:												
Graduated (N=26)	71.3	20	72.1	22	74.2	22	78.7	21	75.9	20	372	88
Enrolled (N=68)	71.4	22	65.7	24	71.2	23	80.3	21	83.1	12	372	88
Dropped out (N=45)	60.4	22	61.2	22	68.1	20	76.1	18	71.7	17	338	82
Probability*	.05		n.s.		n.s.		n.s.		.01		n.s.	
Women:												
Graduated (N=19)	69.2	17	73.9	20	75.4	20	68.4	17	59.3	16	346	71
Enrolled (N=14)	72.9	23	79.1	23	69.9	18	63.6	26	69.0	18	354	90
Dropped out (N=23)	65.3	26	65.5	21	62.9	22	58.7	26	61.3	22	314	105
Probability*	n.s.		n.s.		n.s.		n.s.		n.s.		n.s.	

B. Other State University E

Sex and Enrollment Status	ACE Academic Aptitude		English		Social Studies		Natural Science		Mathematics		Total Score	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Men:												
Graduated (N=63)	65.9	20	63.9	26	67.3	21	71.1	20	69.3	23	338	90
Enrolled (N=30)	57.7	24	57.0	26	71.4	23	72.6	20	67.6	24	326	94
Dropped out (N=15)	54.8	24	50.1	30	59.3	25	61.3	22	67.6	19	293	98
Probability*	.05		.01		n.s.		n.s.		n.s.		n.s.	
Women:												
Graduated (N=50)	63.7	24	70.5	22	64.5	26	65.6	22	65.1	25	329	96
Not graduated (N=16)	54.7	25	61.6	22	67.0	19	50.6	23	54.4	21	289	90
Probability*	n.s.		n.s.		n.s.		.05		n.s.		n.s.	

*Significance level of the values of F obtained in analysis of variance tests of the differences in the means earned by students classified by enrollment status two years after transfer.

Table 14

Mean Total Scores Earned on a Twelfth-Grade Battery by Students with Various Majors Who Transferred to State Universities D and E*

Major Field	State University			
	D		E	
	N	Mean	N	Mean
Liberal arts	62	339	47	344
Science and mathematics	42	338	18	361
Engineering	48	385	-	-
Business administration	14	352	51	313
Teacher education	30	350	58	310

*Analysis of variance tests of the differences between majors at each university did not produce significant values of F.

significant value of F. However, the pattern of means appears to be of some interest because of its resemblance to that found for other universities. The two fields with relatively low ability levels are business administration and teacher education, the latter primarily elementary education. The highest mean score was earned by students with majors in science and mathematics, followed quite closely by students with majors in the liberal arts. The difference between the highest and lowest means was 51 percentile points, or an average of 10 points per test in the battery. The transfer students to University E seem to have sorted themselves out quite well in terms of choosing a major in which they had a good chance of succeeding, since their attrition was low and the rate of graduation on time was high.

The twelfth-grade battery thus appears to have only limited usefulness in distinguishing among eventual success and failures after transfer to University E. It appears doubtful that the use of test results would improve prediction substantially over that made on the basis of junior college grades alone.

Major State University F

A common battery of entrance tests was administered to all freshmen entering both the university and the public two-year colleges from which it drew most of its transfer students. The battery included a locally devised aptitude test with sub-tests of vocabulary, paragraph reading, arithmetic, and algebra; an English test with sub-tests of spelling, vocabulary, punctuation, and grammar; and a mathematics test. Mean scores and standard deviations are given in Table 15 for men and women, by enrollment status two years after transfer. The two groups of women who did not graduate, i.e., the dropouts and those who were still enrolled, were combined since the numbers of such students were very small. Analysis of variance tests of the differences in means earned by the various groups of men and women produced no significant values of F.

Very little patterning of scores could be discerned in the display of means in Table 15. The scores of the women were higher than those of the men on the various sub-tests of the

Table 15

Mean Test Scores and Standard Deviations Earned by Transfer Students to Major State University F, by Status Two Years after Transfer*

Test Score	Men						Women		
	Graduated (N=100)		Enrolled (N=32)		Dropped Out (N=30)		Graduated (N=34)		Not Graduated (N=10)
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean
Aptitude test:									
Vocabulary	56.8	15.4	50.8	12.6	54.5	17.2	57.8	14.2	56.4
Paragraph reading	27.5	5.0	25.6	6.5	26.3	3.6	27.2	4.9	27.9
Arithmetic	20.9	4.9	21.4	4.4	19.9	4.8	18.9	4.9	19.6
Algebra	24.6	6.4	25.7	6.1	25.9	5.1	22.9	6.1	22.4
Total aptitude	129.8	22.8	123.5	21.3	126.6	19.7	126.8	22.4	126.3
English test:									
Spelling	11.6	3.8	10.5	3.6	11.3	3.4	14.2	2.8	14.2
Vocabulary	22.0	7.0	20.6	4.6	19.8	6.4	24.2	5.8	25.3
Punctuation	13.2	4.7	13.4	4.9	14.4	3.7	16.1	4.7	15.6
Grammar	12.0	3.7	11.2	3.9	11.8	3.0	15.2	3.7	16.1
Total English	58.6	14.9	55.7	12.6	57.2	11.3	69.0	13.0	71.2
Mathematics	12.9	6.5	14.1	7.8	13.9	5.4	10.5	6.8	10.4

*Analysis of variance tests of differences between means for the status groups produced no significant values of F. Standard deviations were not computed for the sub-group of women who did not graduate because of the smallness of the sample.

English examination and lower than those of the men on the mathematics test. In many instances, the mean scores of the dropouts were higher than those of the students who were still enrolled, all of whom transferred as juniors and should have graduated two years after transfer. Thus, while the entrance battery may have been efficient in screening out students who would have failed in junior college or later, it apparently was of little use in distinguishing among successes and failures after transfer.

Major State University G

Transfer students to University G were all required to take a battery of entrance tests at the time of transfer, for guidance and placement purposes. The battery included the School and College Ability Test, the Cooperative Reading Test (vocabulary and speed scores), the Cooperative English Test (usage and spelling scores), and a locally devised mathematics test. Means and standard deviations are given in Table 16 for men and women, by enrollment status two years after transfer. Five of the eight analysis of variance tests of the differences in means earned by the men produced values of F which were significant at the .05 level or better. Two of the eight tests for women were also significant. Total scores on the academic aptitude test and the mathematics test discriminated for both sexes among the graduates, dropouts, and students who were still enrolled. The quantitative score on the aptitude test and the usage and spelling scores on the English test also discriminated among the three groups of men. The mean scores of the graduates were higher than those of the dropouts on all tests and, in most cases, were also higher than those of the students who were still enrolled. The variance in the scores of the dropouts was greater than that of the other groups, from which the inference might be drawn that both good and poor students withdrew before graduation. The men earned considerably higher quantitative scores than the women, but the women earned much higher scores on the usage and spelling tests.

The findings seem to indicate that the entrance test battery used by University G distinguished quite well among the successes and failures in the transfer group, particularly among the men. The first-semester grade-point average earned by the transfer group at the university was only 2.0, or C, from which it might be inferred that as many as half the students were in academic difficulty from the start. It appears that the entrance bat ery could have served a useful purpose in screening out some transfer applicants who would earn poor university grades, since there had been relatively little selection on the basis of junior college grades.

State University H

A battery of entrance tests was also given to all new undergraduate students at State University H, including transfer students, for purposes of counseling and placement. The battery included the College Qualification Test, with verbal, information, and numerical sections, and English placement and reading tests. Mean scores and standard deviations earned by the transfer students are given in Table 17, by enrollment status two years after transfer. Scores for all women who did not graduate were grouped because of the small numbers who dropped out and were still enrolled. Analysis of variance tests of the differences in means produced no significant values of F.

The mean scores also failed to show any particular patterning for the various subgroups. The male dropouts earned mean scores on three of the six tests which exceeded those of the students who were still enrolled. However, the mean scores of the graduates were higher than those of the two groups of male non-graduates. The median scores on the various tests tended to separate the dropouts from the other groups much more efficiently than the mean scores. For example, the median score of the dropouts on the English placement test was only 14.5, compared with a mean of 34.9, while the median and mean scores earned by the graduates were 38.2 and 35.4, respectively. Similarly, the median score of the dropouts on the numberical section of the aptitude test was 14 percentile points below the mean, while the median score for the graduates was six points above, although there was a difference of only 10 points in the means. Thus, the lower half of the dropouts apparently earned very poor scores on all or most of the entrance tests, although a few dropouts earned rather high scores which pulled up the means on the same tests.

Table 16

Mean Test Scores and Standard Deviations Earned by Transfer Students to Major State University G, by Status Two Years after Transfer*

Test Score	Statistic	Men			Women		
		Graduated (N=19)	Enrolled (N=33)	Dropped Out (N=41)	Graduated (N=18)	Enrolled (N=13)	Dropped Out (N=13)
Aptitude test:							
Verbal	Mean	39.2	38.9	36.2	40.6	35.8	34.6
	S.D.	7.4	7.4	9.6	8.1	9.8	10.5
Quantitative	Mean	42.4	42.7	37.4	32.4	28.3	28.0
	S.D.	4.6	7.0	7.6	8.2	7.5	6.8
Total	Mean	81.8	81.3	73.8	73.3	62.3	62.7
	S.D.	8.8	11.0	12.9	12.0	14.9	14.3
Reading test:							
Vocabulary	Mean	37.9	36.3	33.4	36.4	34.0	33.9
	S.D.	7.8	8.2	10.2	7.8	9.6	10.4
Speed	Mean	34.0	32.0	29.3	33.9	25.0	24.8
	S.D.	12.9	10.1	13.3	13.4	13.2	13.6
English test:							
Usage	Mean	107.7	103.6	84.9	121.3	110.2	106.1
	S.D.	16.2	24.2	25.0	20.5	33.0	26.1
Spelling	Mean	20.4	20.1	14.4	23.9	21.5	22.9
	S.D.	7.3	10.6	8.1	11.0	12.3	9.2
Mathematics test	Mean	43.2	43.0	35.0	29.7	24.5	18.8
	S.D.	9.8	12.0	12.1	11.0	10.7	9.5

*Analysis of variance tests of the differences in means produced significant values of F for the following measures:

For the men, the Quantitative and Total scores on the aptitude test, P=.01;
the Usage and Spelling scores on the English test, P=.01;
the Mathematics test, P=.01;
For the women, the Total score on the aptitude test, P=.05;
the Mathematics test, P=.05.

Table 17

Mean Test Scores and Standard Deviations Earned by Transfer Students to State University H, by Status Two Years after Transfer*

Test Score	Men						Women		
	Graduated (N=71)		Enrolled (N=33)		Dropped Out (N=31)		Graduated (N=37)		Not Graduated (N=10)
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean
English placement	35.4	24.8	31.7	27.9	34.9	25.4	53.7	25.4	53.2
Reading	60.3	26.8	43.4	28.9	49.4	29.3	55.4	28.7	59.6
Aptitude test:									
Verbal	55.3	28.5	45.2	31.3	48.4	28.2	55.6	26.3	62.8
Information	66.2	22.8	59.3	30.4	55.3	27.9	35.7	24.4	42.0
Numerical	61.4	30.3	54.7	31.9	51.4	34.8	24.1	18.5	25.0
Total	63.4	21.9	52.4	31.6	52.1	29.3	36.1	24.0	43.8

*None of the analysis of variance tests of the differences in means for the male status groups produced significant F values. Tests were not made for the women because of the small number who did not graduate. The aptitude test used is the College Qualification Test. Mean scores are expressed in terms of freshman percentiles for the class which entered in 1960.

The entrance battery used at University H did not appear to be useful in distinguishing among the success and failures in the transfer group, since the variance within the three enrollment groups was about as large as the variance between them. Furthermore, the rather low scores earned by large numbers of transfer students on the various verbal tests, with reference to freshman norms, apparently were poor indicators of their likelihood of success at the university.

Teachers College J

All new undergraduate students at Teachers College J were required to take the American Council on Education Psychological Examination and a reading comprehension test as part of their orientation program. Mean scores and standard deviations are given for men and women in Table 18, by enrollment status two years after transfer. Analysis of variance tests of the differences in means earned by the graduates, dropouts, and the students who were still enrolled produced significant values of F for both men and women on the reading test and for women on the aptitude test as well. The dropouts earned lower scores on all tests than the graduates and the students who were still enrolled. Contrary to the findings for other institutions, the variance in the scores of the dropouts was somewhat less than that of the other groups. It is possible that the dropouts from this college were truly a less able group and that they withdrew almost exclusively because of academic difficulty.

Table 18

Mean Test and Standard Deviations Earned by Transfer Students to Teachers College J, by Status Two Years after Transfer*

Sex	Enrollment Status	N	Test Score			
			Academic Aptitude		Reading Comprehension	
			Mean	S.D.	Mean	S.D.
Men	Graduated	44	105.8	24.3	56.2	9.2
	Enrolled	46	101.1	24.4	52.5	7.9
	Dropped out	33	93.4	21.0	49.7	6.6
Women	Graduated	33	112.9	26.3	59.3	8.6
	Enrolled	14	98.3	26.3	54.8	5.7
	Dropped out	12	88.9	20.8	52.3	8.3

*Analysis of variance tests of the differences in means produced significant values of F at the .01 level for the men on the reading test and at the .05 level for the women on both the reading and the aptitude tests.

Attrition was rather high at Teachers College J, in comparison with other institutions which placed heavy emphasis on teacher education. It may be concluded from the analysis that the entrance tests used by the college distinguished among the successes and failures with some degree of effectiveness, at least in the 1960 transfer group, and that test scores might be used as a supplement to junior college grades in screening out applicants who had little likelihood of success.

Technical Institution K

All new students at the Technical Institution were required to take both the Scholastic Aptitude Test and various College Entrance Examination Board achievement tests. The tests which were taken by the largest numbers of transfer students were the aptitude test which most students took before entering junior college, and English, chemistry, and advanced mathematics examinations. Since the number of graduates was very small, their scores were combined with those of the students who were still enrolled two years after transfer. Their mean scores and those of the dropouts are given in Table 19. Although the mean scores of the dropouts were in all cases lower than those of the "success" group, none of the differences between the means was statistically significant.

Screening and counseling on the basis of the test scores may have taken place at one or more stages in the degree program, before the students transferred to the four-year college. In any event, the variance in the scores of the group which transferred did not appear to be significantly related to their success at the Technical Institution.

Table 19

Mean Test Scores and Standard Deviations Earned by Transfer Students to Technical Institution K, by Status Two Years after Transfer*

Test Score	Enrollment Status					
	Enrolled or Graduated			Dropped Out		
	N	Mean	S.D.	N	Mean	S.D.
Scholastic Aptitude Test:						
Verbal	28	411	76	23	397	103
Mathematics	28	515	77	23	481	85
Total	28	926	129	23	878	170
Achievement tests:						
English	27	442	72	22	440	98
Chemistry	15	509	59	17	480	111
Advanced mathematics	21	578	84	11	541	118

*None of the differences in means between the enrolled (or graduated) group and the dropouts was statistically significant.

Summary

Ability test data were analyzed for 10 institutions in an attempt to find out for the junior college transfer students the extent to which ability was related to performance in the upper division. More specifically, statistical tests were made of the differences in mean scores earned by students who graduated, dropped out, and were still enrolled two years after transfer. Statistical significance was found in the tests made for only four of the 10 institutions. The mean scores of the dropouts were in most instances lower than those of the students who graduated or who were still enrolled. However, the variability in the scores of the dropouts was large since students dropped out for many different reasons, both personal and academic. The findings seem to show that most of the four-year institutions could accommodate students with a rather wide range of ability because of the differing intellectual demands of the various majors offered. Furthermore, it appears that junior college grades alone may provide sufficient evidence of the transfer applicant's potential for doing satisfactory upper division work, if differences among institutions are taken into account.

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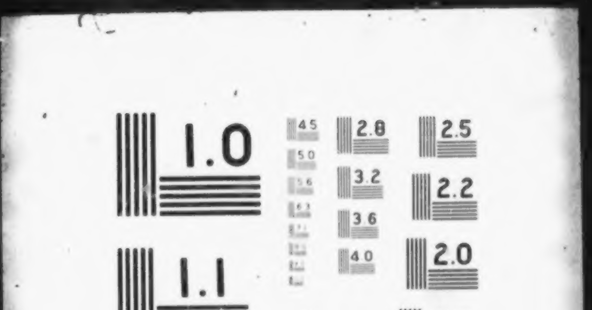
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963

CHAPTER 5

COMPARISONS OF NATIVE AND TRANSFER STUDENTS ON THE BASIS OF ENTRANCE TEST SCORES

Introduction

Basic to any understanding of differences in the performance of native and transfer students is an inquiry into their comparative academic ability and aptitude for college work. In the current study it was found that native students who graduated from the major universities earned somewhat higher grades in their upper division work than transfer students who graduated from these same institutions, although the latter group earned higher grades in junior college than the natives did in the lower division.[1] One possible explanation of the difference found at the upper division level is that the transfer students had less aptitude for college work than the native students, although both groups succeeded in their respective lower division programs and persisted to graduation. One possible explanation of the higher junior college grades earned by the transfer students may be that of different grading standards in the two types of colleges, in relation to the quality of the students they serve as freshmen.

From studies of diversity in higher education made under many auspices it is quite clear that students who enter public junior colleges as freshmen have less academic aptitude, as a group, than freshmen in four-year colleges and universities. A considerable amount of diversity has also been found among four-year colleges of different types, in different regions of the country, and under different types of control.[2] There is, of course, a very considerable amount of overlap in the distributions of scores of the freshmen entering the various two- and four-year colleges, particularly the public institutions. The junior colleges tend to attract a larger percentage of freshmen from the lower ranks of ability and a smaller percentage of high ability students than the four-year colleges, but a majority of the students in both types of colleges come from the middle ranks. It is also known that both two- and four-year colleges lose large percentages of their students before transfer and/or graduation, through attrition for both academic and personal reasons. Many students who enter junior college with the intent to transfer fail to do so. Attrition is also rather high among those who do in fact transfer to four-year colleges. As many as one-half the freshmen who enter four-year colleges drop out before reaching the upper division but attrition among those who begin their junior year is comparatively low. While gross statistics on attrition are available from census-type studies such as the one made by Iffert,[3] the ability of the various groups of students who persist to graduation has not been studied in depth.

A trend toward increased testing at both the freshman and transfer levels was noted in the previous chapter, although the uses to which the test results are to be put are not yet clear. Most of the institutions which participated in the study require their entering freshmen to take some type of aptitude and/or placement tests. Many also had begun to require their transfer students to take the same types of tests by 1960, when the study group entered the four-year colleges. However, only a few of the colleges used the test results to screen out freshmen who appeared to have little likelihood of success and none appear to have made extensive use of test results to screen transfer students who earned satisfactory grades in their prior college work. For the most part, then, the native and transfer students who participated in the study were admitted to the four-year colleges on the basis of their high school and college records, rather than their test performance. It appeared that an analysis of their test scores, in relation to their differing performance in the upper division, might yield some information which would be useful both in understanding obtained differences and in evaluating present policies governing admission.

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[1] Cooperative Research Project No. 1133. D. M. Knoell and L. L. Medsker, Factors Affecting Performance of Transfer Students from Two- to Four-Year Colleges: With Implications for Coordination and Articulation. Center for the Study of Higher Education, University of California, Berkeley, 1964, pp. 156-166.

[2] John G. Darley, Promise and Performance: A Study of Ability and Achievement in Higher Education. Berkeley, California: Center for the Study of Higher Education, University of California, 1962.

[3] Robert E. Iffert, Retention and Withdrawal of College Students. Bulletin 1958, No. 1. Washington: U.S. Department of Health, Education, and Welfare, Office of Education, 1957.

The two major questions to which answers were sought in the analysis of test data made available by the colleges in the study are:

1. How did the academic aptitude and ability of the junior college transfer students compare with that of the native students?

2. To what extent can differences in performance in the upper division be explained in terms of differences in the ability of the native and transfer groups?

Still another question of considerable importance concerns the extent to which transfer students with very high ability appear to have been handicapped by their junior college attendance. In raising the question, it was assumed that students with high ability would have good potential for graduate work and, furthermore, that their upper division grades would provide an index of their so-called handicap. The grades of transfer students in other ranges of ability were not analyzed in detail, on the assumption that differences in the middle ranges were of little practical importance to students whose grades were all either at or above the minimum required for graduation.

Plan of the Analysis of Test Data

Comparisons of the test scores of native and transfer students were made for nine institutions for which analyses were made in the previous chapter. The institutions were located in six states and included five major state universities, two other state universities, one teachers college, and one technical institution.[4] At five institutions, use was made of the results of tests taken either in the twelfth grade or at the beginning of the freshman year in college, under the auspices of state-wide testing programs. The time and conditions of testing were approximately the same for both native and transfer students in these five institutions. At the other four, the tests were administered at the time the students were admitted to the four-year institutions, whether as freshmen or as transfer students with advanced standing. The difference in the time of the testing of the two groups made it impossible to make direct comparisons of their scores. Re-test data were not available for either group, which might have shown gains in scores by students attending different types of colleges. Still, it was thought that the two-year advantage of the transfer students, who had been tested as juniors, should be taken into account in comparing their scores with those of the native students who had been tested as freshmen. Higher mean scores earned by the native students obviously presented no problem of interpretation. However, a finding of no difference in means for groups tested at different times would also be regarded as indicative of the higher level of ability of the native group. Finally, higher means earned by the transfer students would be regarded as indicative of no significant difference in ability, since they were tested after having completed two years of college.

The analysis of test data varied somewhat with the nature and conditions of testing and with the availability of norms for various reference groups. A separate analysis of data was made for the samples of men and women at each institution since sex differences in performance might have invalidated the overall comparisons of native and transfer students. Most of the statistical analysis was limited to the scores earned by the graduates from the nine institutions, for whom extensive comparisons of grade-point averages were made in the first study.[5] Tests were made of the differences in mean scores earned by the samples of graduates from each institution, to find out whether the native and transfer students differed significantly in academic ability and in the cognitive skills which are believed to be essential to success in college. An attempt was also made to relate the test results obtained for the graduates to other kinds of data, e.g., freshman norms, attrition rates, and grades, in order to gain further insight into the quality of the performance of the two groups. Finally, comparisons were made of the grade-point averages of students with high test scores in the samples of native and transfer students, in order to find out the extent to which transfer students with good potential for graduate school might have been handicapped in their pursuit of good grades by having attended a junior college. This particular analysis was restricted to the major state universities on the assumption that their graduates would be most likely to seek advanced degrees.

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[4] Scores were not readily available for native students at one university which was included in the previous analysis.

[5] Knoell and Medsker, op. cit., pp. 156-166.

Test scores were available for reasonably intact groups of graduates from each institution although scores for some students who were included in the grade-point analysis were either missing or not used. For example, state-wide testing programs at the twelfth grade and freshman levels did not involve students who graduated from high schools or who attended junior colleges in other states. Furthermore, a decision was made to discard the scores of students whose age might have been a factor in their performance. In some instances the scores of the transfer students who graduated in 1963 were added to those of the 1962 graduates, in order to augment the size of the comparison group.

Overview of the Findings

A summary of the results of the significance tests of the differences in mean test scores earned by the native and transfer students is given in Table 20. Also included in the table are the lower and upper division grade-point averages earned by the two groups and a limited amount of information about the time and type of testing done at each institution. Detailed findings are presented in the sections following the overview of the findings, including mean test scores and standard deviations.

A number of generalizations about the comparative performance of the native and transfer students on the various tests may be drawn from the findings in Table 20. First, the native students tended to earn higher test scores than the transfer students, except in the comparison involving the teachers college. With this one exception, in all comparisons which produced statistically significant differences in means, the higher scores were earned by the native students. In the many comparisons which produced no significant differences in means, the inference might be made that the native students had somewhat greater ability since they had had two less years of education than the transfer students at the time they were tested. Differences in the ability of the samples of male graduates were greater than those of the women. About half the tests of differences in means for the men yielded values of F which were significant at the .05 level, compared with fewer than one-third of the significance tests made for the samples of women. Both academic aptitude and achievement tests (subject-matter and skill) produced about the same proportion of significant differences in means.

Time of testing appeared to affect the likelihood of obtaining a significant difference in means, particularly in comparisons involving the men. As might be predicted, the probability that the native students would earn a higher mean score was much greater when both groups took the test as freshmen (or prior to college entrance) than when the testing of the transfer students was deferred until they entered the four-year institution. It was assumed that the scores of the transfer students increased during college, before they were tested, and also that the gain in scores of the native students would have been sufficiently great, had they been re-tested as juniors, to produce significant differences in these additional comparisons. However, as has been noted, no data from re-testing were available for analysis. Time of testing had little effect on the findings for the women, for whom fewer tests of differences were significant. The findings may mean that the male graduates who began their degree programs in the universities had greater academic aptitude and ability to do college work than the men who began their programs in junior colleges and later transferred to the universities. While the latter group appears to have made gains in scores during junior college which were often large enough to obliterate the obvious differences in ability, it appears unwise to conclude that the two groups were on a par when they entered the upper division.

The evidence is much less strong that the women who entered the universities as freshmen (and later graduated) had greater potential for college work than those who attended junior college as freshmen. It is possible that only the highly able women transferred from junior college, since the percentage of women who transferred was considerably lower than that of the men. On the other hand, it is also possible that the decision of the women to

Table 20

Summary of Findings Relating to Test Performance of Native and Transfer Students Who Graduated in 1962

Type of Four-Year College	State Code	Time of Testing[a]	Type of Test	Number of Significant Differences Obtained[b]		Lower Division Grade-Point Average		Upper Division Grade-Point Average	
				Men	Women	Native	Transfer	Native	Transfer
Major state university	A	Different	Aptitude	0 of 3	0 of 3	2.71	2.96[c]	2.88	2.66[c]
	C	Same	Aptitude	3 of 3	0 of 3	2.55	2.67	2.94	2.69[c]
	D	Same	Aptitude	1 of 1	1 of 1	2.42	3.02[c]	2.84	2.73
			Subject	4 of 4	1 of 4	-	-	-	-
			Total score	1 of 1	1 of 1	-	-	-	-
	F	Same	Aptitude	2 of 4	0 of 4	2.53	2.52	2.77	2.60[c]
			Total score	1 of 1	0 of 1	-	-	-	-
			English skills	3 of 5	0 of 5	-	-	-	-
			Mathematics	1 of 1	0 of 1	-	-	-	-
	G	Different	English skills	0 of 4	0 of 4	2.69	2.94[c]	2.85	2.60[c]
			Mathematics	0 of 1	0 of 1	-	-	-	-
Other state university	E	Same	Aptitude	0 of 1	1 of 1	2.39	2.69[c]	2.78	2.73
			Subject	1 of 4	2 of 4	-	-	-	-
			Total score	1 of 1	1 of 1	-	-	-	-
	H	Different	Aptitude	0 of 4	3 of 4	2.65	2.61	2.75	2.58[c]
			English	1 of 2	0 of 2	-	-	-	-
Teachers college	J	Different	Aptitude	1 of 1	1 of 1	2.54	2.83[c]	2.75	2.79
			Reading	1 of 1	1 of 1	-	-	-	-
Technical institute	K	Same	Aptitude	2 of 3	-	2.34	3.42[c]	2.76	2.43[c]

[a] Time of testing: "same" means that both groups took the test(s) at the same point in their college careers, either at the end of the twelfth grade in high school or at the time of their admission to college as freshmen. "Different" means that the native students took the test(s) as freshmen, the transfers at the time they entered the four-year colleges.

[b] Where a significant difference was found, the mean for native students was higher than that obtained for transfers at all colleges except Teachers College E, where the reverse was true.

[c] Differences between the pairs of native and transfer mean grade-point averages were found to be significant at the .05 level or better.

attend junior college as freshmen, rather than a university, was based more on personal than academic reasons. Their good high school records left little doubt about their eligibility for university admission as freshmen, which was not always true of the men. The findings in Table 20 also suggest that the native and transfer students who graduated from the teachers colleges did not differ with respect to their ability to do college work. The higher scores which were earned by the transfer students should probably be attributed to the difference in time of testing of the two groups. Support for this interpretation may be found in the very similar grade-point averages earned by the two groups in the upper division and in the very small differential (.04) between the junior college and upper division grades earned by the transfer students.

While the number of variables in the analysis of test scores was much too large to permit more than tentative generalizations to be made, the consistency of the findings from institution to institution was encouraging. Furthermore, patterns of differences in test scores appeared reasonable when they were related to the grade-point achievement of the various groups in the two- and four-year colleges.

Relationship with Grade-Point Differentials

Upper and lower division grade-point averages are shown in Table 20, as well as the results of the analysis of test scores. An attempt was made to discover possible relationships in the two sets of findings--differences in test scores and differences in grades--with the objective of gaining some further insight into the very large variance among the participating institutions in student performance. In spite of the wide range of tests used in the analysis, the pattern of findings exhibited a fair amount of consistency among the various colleges. As might be expected, native students whose test scores were considerably higher than those of the transfer students also tended to earn upper division grades which were significantly higher than those of the transfer students. However, the lower division grades (or those earned in junior college) served as a kind of intervening variable which altered the pattern of achievement at some four-year institutions. When the native and transfer students earned the same level of lower division grades, in different institutions, the very predictable outcome was a significant difference in upper division grades. The transfer students, who had an initial handicap of lower test scores, had the further disadvantage of having to adjust to a new college, to living away from home, and to other conditions which did not affect the native students as juniors. On the other hand, in instances where the transfer students' grades in junior college were significantly higher than the lower division grades of the native students, their chances of earning upper division grades as high as those of the native students improved considerably.

These limited findings might lead to the conclusion that differences in the performance of the native and transfer students at the four-year colleges were in part a function of differences in their academic aptitude or readiness to do college work, and in part the result of the adjustment which the junior college students had to make when they transferred. Furthermore, the magnitude of the difference in performance at the four-year institutions was determined to some extent by the degree to which the transfer students over-achieved in junior college, i.e., a very large differential in the lower division grades of the native and transfer students tended to reduce the grade-point differential at the upper division level to the point of no difference, if the two groups were equal in aptitude.

Performance of High Ability Transfer Students

A question of considerable interest to admissions counselors and others concerns the performance of students with high academic potential who, for one reason or another, attend a junior college during their freshman and sophomore years. Some feel that scholarships or other forms of financial aid should be used to induce all (or most) high school graduates with high academic ability to enter four-year institutions as freshmen, even though they could attend a local two-year college for their lower division work without the benefit of such aid. It appeared that a comparison of the upper division grades earned by native and transfer students with comparable ability might permit some assessment to be made of the possible handicap the junior college transfer students suffer in competing with native students for admission to graduate study, fellowships, and other types of awards.[6]

The selection of a cutting score for each institution involved the two-fold problem of identifying groups of students who would be regarded as intellectually gifted and, at the same time, yielding enough cases in the native and transfer groups to make the analysis worthwhile. Since the institutions included in the analysis were all regarded as major state universities, the assumption was made that the best students at each one had good potential for graduate work, in spite of marked differences among institutions in mean levels of ability. The performance of men and women was analyzed separately for two reasons. First, sex differences were found in the analysis of both grades and test scores. Then, the implications of the findings for the women, who tended to achieve at a higher level than the men, appeared to be somewhat less important because of their lower expectations concerning graduate work. Because of the nature of the sampling, the analysis was confined to simple comparisons of grades earned by the various groups.

A summary of the findings is presented in Table 21, which includes the mean grade-point averages earned by the various samples of native and transfer students with high ability. Two general impressions which are conveyed by the summary table are:

1. The grades earned by transfer students with high ability compared very favorably with those of native students at the same ability level, in the same institution.
2. Although lower cutting scores were used for the women in some instances, in order to obtain larger samples, the proportion of women who earned B averages was higher than that of the men, in both the native and transfer groups.

Findings for Each Institution[7]

Major State University A

All freshmen and transfer students (except engineering majors) who entered the university in 1960 were required to take the Scholastic Aptitude Test. Since the test was not

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[6] Two additional considerations might be mentioned briefly, in the area of values. In the first study interviews were held with a sample of transfer students with high ability and commensurate achievement at all levels, to find out how they evaluated their junior college experience after about three semesters in the senior institutions. It was suggested to the students that increased scholarship and other aid was rapidly becoming available, which would permit many more high school graduates with ability similar to theirs to go directly to four-year colleges. They were asked whether they thought they would make a different decision about attending junior college under these conditions. With few exceptions, the transfer students with high ability reported that they valued their junior college experience so much that they would not easily be induced to forego it. They mentioned specifically the quality of the instruction they received in junior college, the interest of the instructors in their students, and the opportunity to remain with their families during what they regarded as a period of immaturity and uncertainty.

Educators with other values might point out that student satisfactions and/or grade-point averages earned are less important yardsticks for judging the merits of the two types of college experiences than are changes in the intellectual disposition and maturity of the students, which might differ in the two situations. High ability students who attend junior college obviously could not know what benefits might have accrued to them as freshmen in a university. The somewhat negative feelings about lower division instruction in the university can often be traced to the students with only average ability or lower. It is unquestionably true that the nature of the intellectual experience differs in the two types of lower division programs, as a function of the characteristics of the students admitted and the goals of the institutions. How much, if any, the high ability student "suffers" in junior college cannot, of course, be determined in the present analysis. However, the findings should indicate whether such students earned grades which would permit them to undertake the graduate work for which a very large proportion of them reported plans or expectations.

[7] Additional information about the testing program at each institution can be found in Chapter 4, in the analysis of the ability of the transfer students.

Table 21

Mean Grade-Point Averages Earned by High Ability Students in the Samples of Native and Transfer Students in Seven State Universities

Four-Year College	N and Grade-Point Average	Men		Women	
		Native	Transfer	Native	Transfer
A	N	-	48	-	13
	Lower division	-	3.07	-	3.62
	Upper division	-	2.90	-	3.09
C	N	23	10	14	4
	Lower division	2.94	3.08	3.19	3.52
	Upper division	3.13	3.35	3.37	3.20
D	N	28	22	12	7
	Lower division	2.85	2.86	2.82	2.95
	Upper division	2.86	2.61	2.80	2.68
E	N	11	10	22	8
	Lower division	2.36	2.80	2.87	3.30
	Upper division	2.63	2.95	3.11	3.02
F	N	29	13	8	2
	Lower division	2.79	2.67	2.99	3.60
	Upper division	2.88	2.79	3.11	3.22
G	N	18	19	10	6
	Lower division	2.82	2.89	3.23	3.49
	Upper division	2.79	2.62	3.30	2.75
H	N	21	15	17	3
	Lower division	2.78	2.84	2.94	3.35
	Upper division	2.74	2.89	2.97	3.01

taken by the native graduates whose grade-point averages were analyzed in other comparisons, a new native sample was drawn from the roster of 1964 graduates who had been tested as freshmen in 1960. Their scores were compared with those of transfer students who graduated in 1962 and 1963, the latter group having been added in order to increase the size of the sample. Mean scores and standard deviations for the native and transfer graduates are given in the upper portion of Table 22, together with the results of t-tests of the differences in means.

Table 22

Scholastic Aptitude Test Mean Scores, Standard Deviations, and Results of t-Tests of Difference in Means for Samples of Native and Transfer Students at Major State University A

Sample	N	Scholastic Aptitude Test Score								
		Verbal			Mathematical			Total		
		Mean	S.D.	P	Mean	S.D.	P	Mean	S.D.	P
Graduates										
Native men	444	561.3	86.0	n.s.	604.1	88.3	n.s.	1165.4	145.3	n.s.
Transfer men	185	574.9	84.7		591.3	98.5		1166.0	142.1	
Native women	449	559.4	77.5	n.s.	532.1	84.6	n.s.	1091.5	136.5	n.s.
Transfer women	84	570.0	93.7		518.8	91.0		1088.9	147.2	
Entering students										
Native freshman men*	697	543.4	88.9	.01	611.0	87.2	.01	1154.5	-	n.s.
Transfer men	325	569.2	92.4		589.9	99.4		1160.6	-	
Native freshmen women*	387	543.5	86.6	.05	514.5	89.4	n.s.	1058.0	-	n.s.
Transfer women	140	565.4	93.5		498.0	94.9		1064.9	-	

*A random sample of men and women was drawn from the rosters of test scores for entering freshmen in 1960.

No statistically significant differences were found in the mean scores earned by the native and transfer graduates. Their mean total scores were approximately equal. However, the transfer students earned slightly higher verbal scores and slightly lower mathematical scores than the native groups. As might be expected, the women in each group earned higher verbal than mathematical scores. Although engineering majors were not included in the comparison groups, since they did not take the test, the mathematical scores earned by the men were higher than their verbal scores. Further inspection of the table shows that the men and women earned about the same verbal scores but that the mathematical scores of the men were nearly a standard deviation higher than those of the women.

A random sample of freshmen who entered in 1960 was also drawn, without regard to their subsequent enrollment status, in order to make comparisons between their aptitude scores and those of (1) the entering transfer students and (2) the native and transfer graduates. Mean scores and standard deviations for the entering freshmen and transfer students are shown in the lower portion of Table 22, with the results of the t-tests of the differences in means.

Three of the six differences in means were found to be statistically significant at the .05 level or better. The entering transfer students earned significantly higher verbal scores than the entering freshmen but the entering freshmen men earned higher mathematical scores than the entering transfer men. Differences in their total scores were extremely small and non-significant, as was found in the comparison of scores for the samples of graduates. A comparison of the findings in the upper and lower portions of Table 22 shows that the mean aptitude test scores and variances of the native graduates differed little from those of the entering freshmen, and, similarly, that the scores of the transfer graduates differed little from those of the entering transfer students. In other words, both groups of graduates might be regarded as random samples of entering students at the freshman and transfer levels, with respect to their academic aptitude.[8]

One interpretation of the findings might be that there was a fair amount of homogeniety in the general ability level of the university's product, i.e., its recent graduates, despite the fact that a large percentage of them originated in junior colleges. A different interpretation might be that the transfer students who graduated were actually inferior to the native graduates, on the grounds that they should have earned much higher scores than the natives as a result of their having had two years of college before being tested. However, the native students entered college at least two years later than the transfer students with whom they were compared and quite probably were more highly selected than the native group who began college in 1958 or earlier, at the same time as the transfer students. The evidence is somewhat inconclusive, in any case, since the native students were not re-tested as juniors. The findings are quite clear, however, that probability of graduation from the university did not increase as a function of academic aptitude in either the native or transfer group. Since the university admits only those freshman applicants from the top 12.5 per cent of the high school graduating class, and requires transfer students who were below this level to earn a C+ average in junior college, the lack of relationship with test scores is not too surprising.

Performance of high ability students.--Transfer students whose total aptitude test score was 1300 or higher, or about one standard deviation above the mean for the entire group, were defined in this analysis as high ability students. Selection on this basis produced samples of about 20 per cent of all transfer men and 14 per cent of all transfer women who took the test. The performance of the students was examined in terms of their eligibility for freshman admission to the university at the time they graduated from high school and their grades in college.[9]

Almost half the transfer men with high ability would not have qualified for freshman admission to the university on the basis of their high school records. These men probably would not have entered the university at all if it had not been for the junior college, where they remedied their high school subject-matter and grade-point deficiencies in preparation for transfer. Thus, the junior college appears to have served a useful function in making university education available to this high ability group of men who failed to achieve in high school, regardless of their eligibility for graduate school. Most of the women with high test scores performed well in high school and would have been eligible to attend the university as freshmen. The grades earned by these students in junior college and after transfer were examined in an attempt to estimate their potential for graduate school admission. Their university grade-point average for the two years after transfer was found to be 2.97, or 2.90 for the men and 3.09 for the women. The average for all transfer students who graduated in 1962 was only 2.66.[10] The grade-point achievement of the high ability transfer students was thus clearly superior to that of the average graduate who transferred from a junior college. About one-fourth of the men earned averages of B (3.0) or above, both in junior college and after transfer; about two-thirds earned averages of at least 2.5 in both institutions. The small number of men with high junior college grades whose averages dropped far below B after transfer was balanced by an equal number whose grades improved at the university to the point where their averages were B or better. The record of the women was quite similar although they tended to have earned higher junior college grades than the men and to have dropped more after transfer to the university.

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[8] A name-by-name comparison of the test roster of entering freshmen in 1960 and the graduation roster for the spring of 1964 showed that only 30 per cent of the students graduated four years after admission as freshmen. About 60 per cent of the transfer students had graduated by the time the test analysis was made. These percentages of graduates are given solely for the purpose of showing the amount of overlap in the groups of entering students and graduates.

[9] The analysis for this university differs from that made for the others because grade-point data were not available for the native students for whom test scores were obtained. A rather extensive treatment was made of the transfer data on the assumption that all or most of the students admitted to the university had some potential for graduate work, since undergraduate admission was highly selective.

[10] The comparable grade-point average for the sample of native students who graduated in 1962, for whom no test scores were available, was 2.88.

The results of the analysis seem to suggest that transfer students with high ability earned grades at University A which were commensurate with their academic aptitude, at least after the first semester in which they had to make an adjustment to the campus. It is possible that the junior college grades were somewhat inflated, in comparison with the lower division grades they would have earned at the university, because of the quality of the competition among junior college students admitted under an open-door admissions policy.

Major State University C

All freshmen who enter public two- and four-year colleges in the state in which University C is located are required to take the Scholastic Aptitude Test prior to admission. The test results have been used primarily for counseling and research purposes during the eight years the requirement has been in effect. Norms have been prepared annually for the men and women entering each institution, using test scores, high school averages, and predicted freshman averages. Prediction equations have also been prepared for each college, using the same data. Thus, while neither the university nor the junior college freshmen were selected by their institutions on the basis of their test performance, a certain amount of admission counseling of applicants with low test scores undoubtedly took place.

Mean test scores and standard deviations for the samples of native and transfer students who graduated in 1962 are given in Table 23, together with the results of the tests of the differences in the means. The verbal, mathematical, and total scores of the men who began their work in the university as freshmen were all significantly higher than those of the men who transferred from junior college. However, differences in the scores of the women were both negligible and non-significant. The verbal scores of the native men and women and of the transfer women were all quite similar but the transfer men earned a mean verbal score which was considerably below those of the other groups. Sex differences were apparent in the mathematical scores earned by the various groups but the mean score of the transfer men was again considerably below those of the other graduates.

Since the native and transfer students were tested at the same time, under very similar conditions, the evidence is quite conclusive that the male graduates who attended junior colleges as freshmen had less initial aptitude for college work than those who entered the university as freshmen. The evidence seems equally clear that the two groups of women did not so differ. The academic aptitude of the graduates was compared with that of the entering freshmen at University C by relating the scores of the graduates to the 1958 freshman norms. The mean scores of the two groups of women who graduated in 1962 fell at about the 60th percentile for freshmen at the university, on both tests. The freshman percentile equivalents for the mean scores earned by the native male graduates were both about 65 but were only 45 for the transfer group.[11] When the reference group was changed from the university to the junior college freshmen, it was found that the mean scores earned by both men and women in the transfer group were above the 60th percentile on each test. While the percentile ranks differed considerably for the various junior colleges in the state, it was quite clear that the average academic aptitude of the university graduates who began their work in a junior college was considerably above that of the average entering junior college freshman. The findings seem to suggest that the junior colleges in this state have been making it possible for men with considerably less academic aptitude than that possessed by the university freshmen to pursue and succeed in a variety of baccalaureate degree programs. There appeared to

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[11] Separate freshman norms were used for men and women, for each of the two tests. The percentiles thus represent only relative standing with respect to a particular comparison group on one or another of the tests.

Table 23

Scholastic Aptitude Test Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Major State University C

Sample of Graduates	N	Scholastic Aptitude Test Score								
		Verbal			Mathematical			Total		
		Mean	S.D.	P	Mean	S.D.	P	Mean	S.D.	P
Native men	78	420.8	86.5	.01	469.5	76.6	.01	890.6	145.1	.01
Transfer men	43	373.2	71.0		418.2	59.3		791.6	110.5	
Native women	43	434.8	90.1	n.s.	431.9	83.8	n.s.	866.6	158.4	n.s.
Transfer women	15	431.7	85.0		437.9	84.6		869.7	152.8	

be a strong tendency for such men to choose majors outside the liberal arts spectrum, e.g., in agriculture and business administration, in which they had a good chance of succeeding.

Performance of high ability students.--A cutting score was used to identify high ability students which was at approximately the 70th percentile for all freshmen who entered public institutions in the state in 1958. The actual score used was a total unweighted Scholastic Aptitude Test score of 925. Use of this score produced comparison groups which contained 18 per cent of the transfer students and 31 per cent of the native students for whom scores were available.[12] While the percentage of transfer students with high test scores was much smaller than that of the natives, their grade-point performance compared very favorably with that of the natives. The various groups of graduates all earned averages above B at the university, in the upper division. The junior college and lower division university averages were also very nearly B for all groups.

The high ability transfer students earned grades which were considerably higher than the average for all transfer graduates. Only one such student experienced a serious drop in grades after transfer which would have limited his opportunity to undertake graduate work. The findings seem to suggest that high ability graduates from University C who began their work in junior college performed sufficiently well in the upper division, in comparison with native students with the same level of ability, to put them in a competitive position to continue their education beyond the baccalaureate degree.

State Universities D and E

All twelfth-grade students in the state in which Universities D and E are located must take a battery of aptitude and achievement tests before high school graduation. Thus, test scores obtained under very similar conditions of testing were available for all native and transfer students who graduated from high schools in the state. The battery consisted of the American Council on Education Psychological Test and achievement tests in English, social studies, natural science, and mathematics. Freshman applicants to the universities were screened on the basis of their total scores on the battery, with the result that some of the junior college students in the study may have been denied admission to one or both institutions when they graduated from high school. Mean scores and standard deviations for the various groups of graduates are given in Table 24, together with the results of t-tests of differences in the means. Mean scores are expressed as percentile ranks based on the distributions of scores earned by all twelfth-grade students.

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[12] Transfer students who graduated in both 1962 and 1963 were included in the analysis in order to produce a larger comparison group. However, the upper division averages which were analyzed were based on work completed during only the first two years after transfer.

A comparison of the mean scores earned by the two groups of male graduates from University D shows that the men who entered the university directly from high school earned significantly higher scores on all tests than the men who attended junior college as freshmen. The difference in their total scores on the battery was also statistically significant. The variability in the scores of the transfer students was much larger than that of the natives, which suggests that the junior colleges accommodated some students who were denied university admission as freshmen and others with high ability who attended junior college for financial or personal reasons. The native and transfer women were much more similar in ability than the male groups. Significant differences in mean scores for women were found for two of the five tests and for the total score for the battery but it appeared that the differences were all a function of their differing mathematical ability.

At University E it was the women who showed the greater disparity in performance on the twelfth-grade battery. The native women earned significantly higher scores than the transfers on three of the five tests in the battery, compared with only one of the five tests in the comparisons of male scores. However, the differences in total scores earned by native and transfer students of both sexes were statistically significant, as a result of the consistently (if only slightly) higher scores earned by the native groups on all tests. The two universities were similar in this respect, as well as in the smaller variances in the scores of the native students.

The mean scores of the various groups which graduated from the two universities were all above the twelfth-grade medians on the various tests. However, there were striking differences between the two universities in the mean scores earned by the male graduates, particularly the native groups. The differences may be explained partially by the strong engineering curriculum which is offered only by University D, which tended to attract male students of very high caliber. When the engineering students were eliminated from the various comparison groups, the differences in means for the two universities largely vanished. An examination of the frequency distributions of scores for the two universities, which are not shown in the tables, revealed that a much higher percentage of graduates from University E than D had quite low twelfth-grade scores, i.e., total scores below 250 or an average score below the twelfth-grade median. Differences in the scores earned by graduates in the various majors were also large, indicating once more that success in college was dependent to a considerable extent upon a wise choice of both major and institution, in relation to the individual's academic ability.

The analysis of grade-point averages which was made in the first study showed that native and transfer students at both universities earned quite similar upper division grades, although the junior college grades were in each case higher than the lower division grades of the native students.[13] Furthermore, while the various university averages were all about equal, the junior college grades differed markedly for the groups of students who transferred to the two institutions. One group performed considerably better than the other in junior college, but both groups of transfer students did well at the university of their choice in this particular state, in comparison with native students. The findings seem to suggest that similar grade-point averages may be earned by students with quite different test scores who attend different universities. Furthermore, quite different grade-point averages may be earned by students with very similar test scores who attend different types of colleges as freshmen (or different universities). This seeming discrepancy merely confirms the finding

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[13] _Ibid._, pp. 156-164.

Table 24

Twelfth Grade Mean Test Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Two State Universities Located in a Single State*

A. State University D

Test Score	Men					Women				
	Mean		S.D.		P	Mean		S.D.		P
	Native	Transfer	Native	Transfer		Native	Transfer	Native	Transfer	
ACE total	84.4	71.6	14.8	21.3	.01	80.9	70.8	15.5	18.5	.05
English	80.4	68.8	17.7	23.3	.01	81.1	76.4	14.4	19.9	n.s.
Social studies	83.9	72.3	16.4	24.6	.01	80.7	73.2	16.8	19.3	n.s.
Natural science	86.3	80.0	12.2	20.7	.05	69.5	66.3	18.7	20.1	n.s.
Mathematics	86.6	80.8	12.6	15.5	.05	74.1	62.1	20.6	16.7	.01
Total	421.7	373.3	56.8	88.4	.01	386.3	349.1	64.6	74.4	.05

*The following numbers of graduates were included in the samples for State University D: native men, 1962 graduates, 72; transfer men, 1962 and 1963 graduates, 83; native women, 1962 graduates, 37; transfer women, 1962 and 1963 graduates, 30.

B. State University E

ACE total	72.1	65.9	14.4	19.9	n.s.	77.9	63.7	19.2	24.4	.01
English	66.0	63.9	22.2	25.8	n.s.	82.0	70.5	16.6	21.6	.01
Social studies	79.2	67.3	17.3	21.0	.01	74.8	64.5	20.9	25.6	.05
Natural science	74.8	71.1	16.6	20.1	n.s.	67.3	65.6	22.9	22.1	n.s.
Mathematics	76.6	69.3	19.3	22.8	n.s.	68.0	65.1	24.8	24.8	n.s.
Total	370.7	338.0	74.2	90.4	.05	376.8	329.3	75.0	96.1	.01

*The following numbers of graduates were included in the samples for State University E: native men, 1962 graduates, 44; transfer men, 1962 graduates, 63; native women, 1962 graduates, 62; transfer women, 1962 graduates, 50.

of diversity in higher education, i.e., that junior colleges differ from four-year colleges, and that four-year colleges differ among themselves, both in the kinds of students they attract and in their impact on students.

Performance of high ability students.--An arbitrary cutting score was established for University D which was roughly equivalent to the 90th percentile on the total twelfth-grade battery, i.e., the score which separated out the top 10 per cent of the high school seniors in 1958. The 85th percentile was selected for the women, in order to obtain a larger comparison group. Use of these cutting scores produced samples equal to somewhat more than one-third of the native students and 17 per cent of the transfer students who graduated either in 1962 or in 1963. Use of the 85th percentile as the cutting score for both men and women at University E produced samples of 31 per cent of the native graduates and 16 per cent of the transfers. However, a surprisingly large number of women with high ability was generated by using this score in the native group, compared with the numbers obtained at other universities. The difference in the percentages of native and transfer students with high ability appears to be consistent with the finding that the total groups differed significantly with respect to their scores on the twelfth-grade battery.

At University D, the upper division grades of the native students with high ability were considerably higher than those of the transfer students, although their lower division grades did not differ very much. At University E, however, the transfer men with high ability earned higher grades than the natives at both levels. The transfer women with high ability excelled only at the lower division level and did slightly less well than the native women in the upper division. However, differences among the various upper division averages earned at both universities were relatively small for none fell below 2.5 and only one was slightly above 3.0. Thus, none of the groups appeared to have a distinct grade-point advantage in seeking admission to graduate work at the university from which they received their degrees. Only a few transfer students with high ability suffered what was regarded as a serious drop in grades after entering University D. Since most of these students were still enrolled for a third year after transfer, they might have had time to raise their grades to a level commensurate with their ability and junior college achievement.

The evidence seems quite clear that high ability transfer students to one university in the state were not handicapped at all in their pursuit of high grades and that only a few transfer students to the other university dropped seriously below the level of their junior college grades. Further study is needed to find out whether this latter group would have done better if all had completed two years in junior college before transfer, as was done by the transfers to the university where no handicap was found.

Major State University F

Both native and transfer students in the samples of graduates from University F took the same battery of tests as part of the freshman admissions program. Standards for admission at the freshman level were at least theoretically the same for applicants to both the two-year colleges and the university. However, space limitations at the university and a pre-admissions counseling program each served a kind of selective function. The best qualified applicants were given priority in admission to the university as freshmen and the less well qualified were advised to attend a two-year college. The battery included an English placement test with part-scores for spelling, vocabulary, punctuation, and grammar; a mathematics test; and a so-called aptitude examination with part-scores for vocabulary, paragraph reading, arithmetic, and algebra.

Means, standard deviations, and the results of tests of the differences in means earned by the native and transfer students are given in Table 25. None of the differences in means was statistically significant in the comparisons involving women, although the native students earned slightly higher mean scores than the transfers on all tests except spelling. The two groups of male graduates differed significantly on seven of the 11 measures for which significant tests were made. These included the total score and the arithmetic and algebra sub-scores on the aptitude examination, the mathematics test, and the total score and punctuation and grammar sub-scores on the English placement test. The mean scores earned by the native students on the other tests in the battery were also higher than those of the transfers but differences were not significant. The native men also ranked significantly higher

Table 25

Freshman Admission Test Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Major State University F

Test Score	Men*					Women*				
	Mean		S.D.		P	Mean		S.D.		P
	Native	Transfer	Native	Transfer		Native	Transfer	Native	Transfer	
University aptitude:										
Vocabulary	60.8	56.8	17.0	15.4	n.s.	61.7	57.8	16.3	14.2	n.s.
Paragraph reading	28.6	27.5	4.9	5.0	n.s.	28.5	27.2	5.3	4.9	n.s.
Arithmetic	24.0	20.9	5.0	4.9	.01	20.6	18.9	5.1	4.9	n.s.
Algebra	27.4	24.6	5.9	6.4	.01	24.0	22.9	7.0	6.1	n.s.
Total	139.9	129.8	25.4	22.8	.01	134.2	126.8	25.6	22.4	n.s.
English placement:										
Spelling	12.4	11.6	3.7	3.8	n.s.	13.4	14.2	3.9	2.8	n.s.
Vocabulary	23.8	22.0	7.5	7.0	n.s.	26.8	24.2	6.7	5.8	n.s.
Punctuation	16.5	13.2	4.3	4.7	.01	18.1	16.1	3.4	4.7	n.s.
Grammar	13.8	12.0	4.1	3.7	.01	15.1	15.2	3.8	3.7	n.s.
Total	66.4	58.6	15.6	14.9	.01	72.8	69.0	14.8	13.0	n.s.
Mathematics	17.8	12.9	8.1	6.5	.01	12.9	10.5	6.7	6.8	n.s.

*The following numbers of graduates were included in the samples: native men, 1962 graduates, 103; transfer men, 1962 graduates, 97; native women, 1962 graduates, 34; transfer women, 1962 graduates, 21.

than the transfers in their high school graduating classes. As might be expected, the men in both comparison groups earned higher scores than the women on the various tests involving mathematical skills and lower scores on the English usage tests.

In order to compare the ability of the graduates with that of the entering freshmen, a random sample of 150 men and 100 women was drawn from the roster of all new freshmen in 1958. The sample included students at both the two-year colleges and the university since it was not possible to distinguish between the two types of students on the test roster. The total scores on the freshman aptitude examination were used in the comparisons. Significance tests of differences in mean scores produced only one finding of note, namely, that the native male graduates earned a significantly higher mean score than that earned by the random sample of entering freshman men. Neither group of women graduates differed from the sample of entering freshman women, nor did the male sample of transfer graduates differ from the entering male freshmen. No clear interpretation of the findings can be made with access to test data for the students in the two-year colleges and the university, separately, in order to find out how the groups compared at the point of intake. However, the findings seem to suggest that the freshman men at the university were subjected to a somewhat more rigorous screening during their first two years than was given to the men who attended the junior colleges, or to the women in either type of institution. The present findings also appear to reflect the success of other two-year colleges in preparing some male students with lesser ability to transfer as juniors with a reasonably high probability of success in achieving their degree objectives.

Performance of high ability students.--The distribution of the 1958 freshman scores on the aptitude examination was used to establish a cutting score to identify the high ability students in the samples of graduates. A score was chosen which fell about one standard deviation above the mean. It produced samples of 27 per cent of the native graduates and 12.5 per cent of the transfers, including some students who graduated three years after transfer.[14] Differences in the grade-point averages earned by the two groups of high ability men were very slight, i.e., only .12 at the lower division and .09 at the upper division levels. In both instances the higher average was earned by the native group. The averages were all above 2.5 but below 3.0. None of the men suffered a serious drop in grades after transferring to the university and most, in fact, improved their averages after leaving junior college. Since only two transfer women were singled out by the cutting score, no useful comparison could be made of their performance with that of the native women.

The data for the men suggest that there is no reason to believe that very able students who spent their first two years in a junior college were handicapped in competing for grades with native students in the upper division at this particular state university.

Major State University G

All new undergraduate students at State University G were required to take a battery of entrance tests at the time they began work there, whether as freshmen or as transfer students with advanced standing. The battery included an academic aptitude test and achievement tests in reading, English, and mathematics. A change was made in 1960 in the aptitude test used. As a result, the comparison on the basis of aptitude involved using scores on the American Council on Education test for the native students and scores on the School and College Ability Test for the transfers. Since the tests differ quite markedly in the way in which aptitude is defined and measured, no attempt was made to equate the scores. However, in order to make a rough comparison of the aptitude of the two groups, freshman stanine equivalent scores were obtained.[15] The distributions of the standard scores on the aptitude tests are given in Table 26, together with the medians, for the samples of native and transfer graduates. The transfers were separated into two groups, the first comprised of the students who entered the university prior to 1960 and who were given the ACE test, and the second of those who entered in 1960 and who were given the SCAT. Both 1962 and 1963 graduates were included in the second group, in order to obtain a reasonably large comparison group.

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[14] Although the number of high ability women thus identified was very small, no attempt was made to establish a lower cutting score for them since the total number of women graduates from which to draw a sample was very small.

[15] The actual type of score used was the "sten" or standard ten, which has a range of from 0 to 9, a mean of 4.5, and a normal distribution. The term stanine is used in the discussion because of its greater familiarity.

Table 26

Distributions of Stanine Scores on the ACE and SCAT Aptitude Examinations Earned by Samples of Native and Transfer Graduates from Major State University G

Stanine Score	Men				Women			
	Natives (ACE)	Transfers			Natives (ACE)	Transfers		
		1960 (SCAT)	Earlier (ACE)	Total		1960 (SCAT)	Earlier (ACE)	Total
9	1	1	1	2	1			
8	9	2	0	2	6	2	3	5
7	17	17	3	20	7	2	2	4
6	16	17	15	32	11	9	2	11
5	12	18	14	32	5	18	4	22
4	10	5	11	16	5	11	1	12
3	2	2	1	3	2	9		9
2						1		1
Total	67	62	45	107	37	52	12	64
Median	6.1	5.8	5.2	5.6	6.1	4.8	6.0	5.0

The native graduates who had taken the ACE test earned a median aptitude test score which was higher than that earned by any of the various transfer groups. The standard score median of 6.1 which was earned by the native graduates was about equal to the score below which three-fourths of the freshman scores fell. The median scores for the various combined transfer groups was found to be 5.6 for the men and 5.0 for the women. However, differences were found among the various transfer groups, which showed no particular pattern. A further complicating factor was introduced by using the 1960 freshman norms to obtain the standard score equivalents for the transfer students. All evidence pointed to the superiority of the 1960 freshmen over the earlier norm group on which the native student scores were based. Thus, while the magnitude of the difference in ability to undertake college work was obscured by a number of factors, the comparisons suggest strongly that the native students had higher average ability than the transfer students from the junior colleges.

Mean scores and standard deviations for the reading, English, and mathematics tests are given in Table 27, together with the results of tests of the differences in means. None of the differences in means earned by the native and transfer graduates was statistically significant. A number of the mean scores earned by the native groups were higher than those earned by the transfers but no particular pattern of differences could be inferred. However, since the native students took the tests as freshmen and the transfers as juniors, after two full years in college, it cannot be concluded that the two groups had the same level of skills at the time they graduated. It might be argued that the transfer students should have earned higher scores than the natives, as a result of their college experience, and that since they failed to do so, they were actually less able than the native students in these skill areas. On the other hand, it could also be argued that forgetting had taken place among the transfer students as a result of disuse after they had completed their freshman composition and mathematics courses. The only possible conclusion from the findings is, therefore, that the sample of transfer graduates, when tested as juniors, did not differ significantly from the native graduates who were tested as freshmen.

Table 27

Placement Test Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Major State University G

Test Score	Men*					Women*				
	Mean		S.D.		P	Mean		S.D.		P
	Native	Transfer	Native	Transfer		Native	Transfer	Native	Transfer	
Cooperative reading:										
Vocabulary	35.4	34.5	9.7	8.3	n.s.	38.0	38.0	10.1	9.8	n.s.
Speed	34.6	31.5	11.3	11.9	n.s.	41.2	36.8	16.7	14.3	n.s.
Cooperative English:										
Usage	102.5	98.3	26.5	19.5	n.s.	124.4	121.0	25.3	21.2	n.s.
Spelling	17.9	17.9	10.5	8.6	n.s.	26.9	24.3	9.2	11.3	n.s.
Mathematics	39.8	41.8	10.6	11.0	n.s.	30.8	27.5	12.1	10.2	n.s.

*The following numbers of graduates were used in the samples: native men, 1962 graduates, 66; native women, 1962 graduates, 37; transfer men, 1962 and 1963 graduates, 64; transfer women, 1962 and 1963 graduates, 30.

In order to make additional comparisons, the mean scores earned by the graduates were converted to freshman percentile ranks which had been developed for a class which entered prior to 1958. Both groups of graduates exceeded the freshman median on each test and were above the 65th percentile for freshmen on a number of tests in the entrance battery. Comparisons involving percentile ranks also revealed that sex differences in performance on the tests were greater than differences between the native and transfer groups. The women earned mean scores which were in the upper quartile for entering freshmen, except on the mathematics test. The men, on the other hand, earned verbal scores which were between the 55th and 66th percentiles but mathematics test scores above the 80th percentile. It is quite possible that these same sex differences were present at the freshman level since separate norms were not developed for men and women.

Conclusions about the relative ability of various groups of graduates from this university are limited by the use of different types of aptitude tests for the native and transfer students, and by the different times at which the two groups were tested. However, the findings seem to suggest that both native and transfer graduates were superior in ability to the average freshman who entered the university around 1958, and that the native group was probably somewhat superior to the transfer students, at least at the time both groups entered college as freshmen. However, the scores of the transfer group appear to have improved during junior college to the point that they were about equal to those earned by the native graduates when they entered as freshmen.

Performance of high ability students.--Scores earned on the academic aptitude tests were used in the identification of high ability students at University G. An attempt was made to apply the same standard to the native and transfer groups, although they took different tests and different groups were used in establishing the norms. A decision was made to use the 90th percentile for freshmen as the cutting score for men on both tests and the 75th percentile as the cutting score for women, the latter in order to obtain sufficiently large comparison groups. Use of these cutting scores produced samples of 27 per cent of the native graduates and 24 per cent of the transfer students who graduated either in 1962 or in 1963.[16]

The native students in the high ability group earned somewhat higher grades in the upper division than the transfer students with similar ability but the difference was quite small, particularly for the men. The transfer students' junior college grades, on the other hand, were somewhat higher than the lower division grades of the native students. One factor in the comparatively poor performance of the transfer students was the serious drop in grades which more than one-fourth of the group experienced after they entered the university. Those who were enrolled for at least a fifth semester after transfer had a further opportunity to improve their university averages but it appeared doubtful that many could raise them to a level which would enable them to qualify for graduate work. The findings suggest that some transfer students with high aptitude and superior junior college grades did not live up to their potential after transfer to University G, but that others with similar ability succeeded in earning grades which compared favorably with those earned by the native graduates with high ability.

State University H

A battery of aptitude and placement tests was administered to all new freshmen and transfer students at the time they entered University H. The battery taken by the 1962 graduates included the College Qualification Test, an English placement test, and a reading test. Mean scores earned by the native and transfer graduates are given in Table 28, together with the results of significance tests of the differences in means. The scores are expressed as percentiles based on the distributions of scores earned by freshmen who entered in 1960.[17] The two groups of male graduates did not differ significantly on five of the six measures of academic ability which comprised the entrance battery. The significantly higher mean score of the native group was earned on the English placement test. Three of the six differences in means earned by the women were statistically significant, including the information and numerical sections and the total score on the academic aptitude test. The mean scores of the native women were higher than those of the transfers on all tests, irrespective of the finding of significance. The variance in the total aptitude scores of the native students was considerably larger than that of the transfers but there was no particular pattern in the variance associated with the other test scores.

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[16] The rather large group of high ability transfer students which was generated by these cutting scores may be explained by their having been tested as juniors, although freshman percentile ranks were used in establishing the cutting scores. It appears unwise, in any case, to conclude that this university attracted a larger percentage of transfers with very high ability than were attracted to the other institutions studied.

[17] The type of score furnished by the university differed for the native and transfer students, although they took the same tests. A standard score which was normally distributed and had a range of from 1 to 10 was given for the native students and percentile scores for the transfers, both based on distributions of scores for entering freshmen but in different years. In order to compare the two groups, the two types of scores were converted to raw score form. However, the scores in the table are expressed as 1960 freshman percentiles, for ease in interpretation. Standard deviations are not given since raw scores were used in their computation.

Table 28

Mean Placement Test Scores and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates at the Time of Their Admission to State University H

Test Score	Men[a]			Women[a]		
	Native	Transfer	P[b]	Native	Transfer	P[b]
College Qualification Test:						
Verbal	59.6	56.3	n.s.	57.9	56.6	n.s.
Information	66.1	69.4	n.s.	52.5	33.2	.01
Numerical	63.1	61.9	n.s.	42.2	22.9	.01
Total	65.9	66.7	n.s.	50.2	34.1	.05
English placement	47.7	30.3	.01	60.9	53.1	n.s.
Reading	54.7	61.4	n.s.	57.2	55.3	n.s.

[a] The following numbers of graduates were included in the samples: native men, 1962 graduates, 66; native women, 1962 graduates, 47; transfer men, 1962 graduates, 71; transfer women, 1962 graduates, 37.

[b] Mean scores are expressed as freshman percentile ranks. However, the tests of the differences in means were made using raw scores, rather than percentiles. Standard deviations are not given since they were computed from the raw scores.

A comparison of the aptitude scores of the graduates with those of entering freshmen showed that the means for the male graduates were higher than the scores earned by about two-thirds of the freshmen who entered in 1960. The highest score of the male graduates was on the information section of the aptitude test, their lowest on the verbal section. The rather poor performance of the men on the verbal aptitude measure was reflected in their low scores on the English placement test, which fell below the median for entering freshmen. The mean score earned by the men on the reading test was above the freshman median, which might suggest that reading is a more critical skill than English usage in the achievement of success in college. The women graduates compared less favorably with the 1960 freshmen than did the men, except on the English usage test. The mean scores of both groups of women were above the freshman median on the three measures involving verbal skills, but below the median on the numerical section of the aptitude test. Their relative position differed on the information section of the aptitude test, with the native group scoring above the freshman median and the transfer group considerably below. Their relatively low scores on these two sub-tests resulted in total aptitude scores which placed the native women precisely at the freshman median and the transfer women at only the 34th percentile, or just above the bottom third of the entering freshman class.

The use of common freshman norms for men and women may have produced somewhat exaggerated patterns of scores for the graduates, whose scores were subjected to separate analyses for men and women. No normative information was available concerning sex differences in the performance of the freshmen on the various tests. Therefore, there is no way of knowing whether the differences which were found for the graduates were also present at the freshman level, or whether attrition produced these differences. The native-transfer comparisons may suggest that the graduates who attended a junior college as freshmen were less able than the native group, since the scores they earned as juniors were no higher (and, in some cases, lower) than the scores earned by the native group as freshmen. Normative data over a three-year period showed a marked improvement in the quality of the freshmen during the time of the study. The 1960 norms may thus have underestimated the standing of the graduates in relation to the entering 1958 class of which they were a part. There is also some reason to question the validity of the aptitude test results for the women since these students appear to have been successful in their chosen majors, in spite of their low test scores. It is possible that their majors required little or no numerical ability and that their information scores bore little relationship to survival in their chosen programs.

The level of scores earned by the transfer students may reflect disuse of particular skills or abilities which were not needed in their college work, e.g., numerical skills by humanities majors. However, since scores were not available for the transfer students at the time they entered junior college, no inferences can be drawn about their gains and losses between the freshman and junior years. Changes in scores would undoubtedly be influenced by choices of major and general education courses to satisfy requirements, and by other factors which are beyond the scope of the present study. The tentative conclusions which were reached for University G appear to be applicable here, namely, that both groups of graduates were somewhat superior to the average freshman who entered the university in 1958 and that the transfer students may have been less able and ready to undertake college work than the native students as freshmen.

Performance of high ability students.--The identification of high ability students at University H was also made difficult by the different types of scores reported for the two groups and the different times at which they were tested. A decision was made to define high ability native graduates as those who had earned total scores of 8, 9, and 10 on the aptitude test, and transfers as those whose scores fell at or above the 90th percentile for freshmen who entered the university in 1960.[18] Use of these cutting scores produced samples of about 34 per cent of the native graduates and 12 per cent of the transfers who graduated either in 1962 or 1963. The very poor performance of the transfer women on the aptitude test resulted in their virtual elimination from the high ability analysis.

The grades of the high ability transfer students were slightly higher than those of the natives in all comparisons. None of the transfer graduates experienced a drop in grades which would have endangered their eligibility for graduate work at the university. The pattern of grade-point averages earned by the two groups of graduates gives an impression of stability of performance from the lower to the upper division, and of comparability of performance by the two groups. The findings for University H thus provide additional evidence that transfer students with high ability and good junior college performance were not handicapped by their choice of the junior college as the institution in which to begin their college work, as judged by the grades they received after transfer.

State Teachers College J

New students at the freshman and transfer levels were required to take the American Council on Education aptitude test and a reading comprehension test as part of their orientation at College J. Mean scores and standard deviations earned by the native and transfer graduates are given in Table 29, together with results of the tests of the differences in means. The transfer groups earned mean scores which were significantly higher than those of the native students, on both tests. The women in both groups earned higher mean scores than the men. Since the native students were tested as freshmen and the transfers as juniors, it

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[18] Approximately 12 per cent of the 1958 freshmen earned derived scores of 8, 9, and 10 on the aptitude test.

Table 29

Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Teachers College J on Aptitude and Reading Tests

Test Score	Men*					Women*				
	Mean		S.D.		P	Mean		S.D.		P
	Native	Transfer	Native	Transfer		Native	Transfer	Native	Transfer	
Academic aptitude	93.7	102.7	22.6	24.4	.05	101.8	113.0	21.4	24.6	.05
Reading comprehension	50.1	55.1	7.7	8.8	.01	54.3	60.1	7.9	8.8	.01

*The following numbers of graduates were used in the comparisons: native men, 1962 graduates, N = 47; native women, 1962 graduates, N = 38; transfer men, 1962 graduates, N = 63; transfer women, 1962 graduates, N = 39.

is possible that the differences in mean scores should be attributed to differences in the time they were tested, rather than the superiority of the transfer group. Since there was no significant difference in their upper division grade-point averages, the inference that the native and transfer graduates did not differ in ability seems reasonable. Further support may be gained from a comparison of the scores of the students who transferred after only one year in junior college with those who transferred after two. The scores of the former group on both the aptitude and reading tests were lower than those of the students who transferred as juniors, which suggests that gains in score took place during both years in junior college.

Both freshman and transfer norms were available, which made it possible to compare the quality of the graduates with that of the entering groups of students. The mean scores earned by the two groups of male graduates on the aptitude test both fell at about the median for entering freshmen and transfer students. The scores of the women fell somewhat about the medians for entering students, i.e., between the 50th and 60th percentiles for the native group and between the 60th and 70th percentiles for the transfers. The findings suggest that the graduates from this college had about the same average aptitude as the entering students, except for the transfer women who earned higher scores. Attrition among the junior college students after transfer was relatively high at College J, compared with the other teachers colleges in the study. However, the aptitude test results were not found to be significantly related to enrollment status two years after transfer, at least for the sample of men for whom attrition was particularly high. No statistics were available concerning attrition among the native students. However, there was some indication that men with aptitude test scores at the two extremes, i.e., very high and very low, dropped out before graduation. Those who earned low aptitude scores probably dropped out after making unsatisfactory grades while those with very high scores may have transferred to a university after completing lower division requirements at the teachers college. College J has been performing some junior college functions by serving as a transfer institution with pre-professional programs and by offering terminal programs in such fields as business and auto mechanics technology. It appears that a wide range of abilities could be accommodated at the lower division level in the various types of programs offered by this college, but that only students in the middle range of ability would survive to graduate with a baccalaureate degree.

U.S. Office of Education
Cooperative Research Branch

#2167 Articulation Between Two-year and Four-Year Colleges

Leland L. Medsker, Center for the Study of Higher Education,
University of California, Berkeley, California
June 15, 1963 to April 30, 1964
$27,638

Objectives

1. To make depth studies of student characteristics, using data collected in a previous study (Cooperative Research Project No. 1133), to account for variance in the academic performance of transfer students from 2-year colleges.

2. To analyze selected characteristics and programs of a sample of 40 4-year colleges in order to relate institutional variables to observed differences in rates of retention and "on-time" graduation of transfer students from 2-year colleges.

3. To explore the roles, functions, and activities of newly established coordinating agencies in higher education in the areas of admission, acceptance of transfer credit, and program articulation between 2-year and 4-year colleges.

Procedures

Extensive information has been collected for approximately 8,000 students who transferred from 2-year colleges to a sample of 40 4-year colleges in 10 states in the fall of 1960. This project will analyze data which have been collected. Student data will be related to various individual performance measures. College characteristics will be related to rates of retention and "on-time" graduation. Reports of the status in 1962-63 of non-graduates will be requested from the colleges. Students who have withdrawn will be asked to fill out a questionnaire. Staff in coordinating agencies will be contacted to find out their involvement in problems of transfer students and program articulation.

Technical Institution K

Scholastic Aptitude Test scores were available for most of the students in the samples of graduates from Institution K whose grade-point averages had been analyzed previously. Graduates in both 1962 and 1963 were included in the test score analysis, in order to increase the size of the transfer comparison group. Most of the students took the aptitude test at the time they were admitted to college as freshmen. Their mean scores and standard deviations are given in Table 30, together with the results of significance tests of the differences in means. The native group earned higher mean scores than the transfers on both the verbal and mathematical tests but only the former difference was statistically significant. The difference in their total aptitude test scores was also significant at the .05 level.

Table 30

Mean Scores, Standard Deviations, and Results of t-Tests of Differences in Means for Samples of Native and Transfer Graduates from Technical Institution K on the Scholastic Aptitude Test*

Test Score	Mean		S.D.		P
	Native	Transfer	Native	Transfer	
Verbal	497	416	102	83	.01
Mathematical	571	526	105	81	n.s.
Total	1068	942	188	145	.05

*There were 20 men in the sample of native graduates and 29 in the sample of transfers.

The mean scores of the graduates were compared with those of the entering freshmen in 1958, in order to find out whether attrition during the undergraduate years had produced an increase in the average ability level of the students. The comparison showed that the mean scores of the native graduates were only slightly above the freshman medians. Furthermore, the verbal score of the transfer graduates was below the 20th percentile and the mathematical score below the 40th percentile for freshmen. The findings suggest that verbal ability was not critical in determining success beyond the freshman year at the institution. It also appears that attrition during the program did not take place exclusively among students with low mathematical ability. The graduates who entered the technical institution as freshmen thus appear to have been more highly endowed with academic aptitude than their classmates who began their programs in two-year colleges, especially in verbal ability. Since a majority of the students in both groups were enrolled in engineering programs, the difference in their verbal aptitude was probably of small consequence in their performance at the institution.

Summary

Entrance test data were analyzed for nine of the participating institutions, in an attempt to find out whether the graduates who started college in four-year institutions and persisted to graduation differed significantly from those who began in junior colleges and subsequently transferred to four-year institutions where they completed their degree programs. The upper division grades of the native group were generally higher than those of the transfer students, although in many instances the junior college grades of the transfers were higher than the lower division grades earned by the native students in the four-year institutions. Differences in academic ability or readiness to undertake college work, as evidenced by scores on English and mathematics proficiency tests, if found in the analyses of test data, were expected to be useful as explanatory factors in accounting for differences in grade-point achievement.

The evidence is quite clear from the various analyses that the general level of academic ability of the male graduates who entered universities as freshmen was greater than that of the group which took its lower division work in a junior college. The evidence was much less clear for the women who graduated from the various colleges, since it appeared that a much larger proportion of women than men attended junior college for personal or financial reasons. Transfer students who were tested as juniors tended to earn scores which were as high as those earned by the native students as freshmen, but the equality was probably a result of their having had two years of college before taking the tests. Analyses of native and transfer students who were identified as having high ability and good potential for graduate work showed that most students who attended junior college for their lower division work were not handicapped, at least in so far as in earning upper division grades which would qualify them for graduate study.

CHAPTER 6

CURRENT POLICIES AND PRACTICES AFFECTING TRANSFER STUDENTS

Introduction

The junior college students in the transfer study entered four-year colleges in 1960 and competed with native students who were admitted in 1958 or earlier. Since a period of several years had elapsed between the entrance dates of the two groups and the completion of the study, it was deemed desirable in the second study to obtain current information concerning admission and retention standards, evaluation of transfer credit, and graduation requirements. An impression was fairly widespread that admission standards are now higher as a consequence of increased competition for limited space in the four-year colleges, that the quality of the entering students is better, and that conditions for retention are more stringent than in 1958. The documentation of these trends appeared to be useful as a basis for drawing implications concerning the future mobility of junior college transfer students. Furthermore, articulation at the college level, both formal and informal, was in a fairly early stage of development at the time the study was instituted but was expected to grow. Coordinating machinery for higher education is still in an embryonic stage in many states but a brief report of significant developments involving the junior colleges seemed pertinent.

A request was sent to the participating institutions in the summer of 1964 for information about significant changes which had taken place since 1960 in each of the following areas:

1. Freshman admission requirements (or new counseling or self-selection procedures which resulted in improvement in the quality of the freshmen);

2. Standards for admission with advanced undergraduate standing, particularly as they pertained to junior college transfer students;

3. Policies governing the evaluation and acceptance of transfer credit;

4. Retention standards, i.e., conditions for academic probation and dismissal;

5. Graduation requirements, particularly those which had implications for transfer students;

6. Articulation involving the junior colleges.

An attempt was made throughout the study to collect examples of materials designed to improve articulation between two- and four-year colleges. These materials included informational and promotional brochures for transfer students, listings of parallel or equivalent courses offered by the two types of colleges, state and local studies of transfer students, proceedings from articulation conferences, and reports of committees in the various subject-matter areas. Information on developments concerning coordination at the state level was also collected from a variety of sources. Furthermore, statistics on the nature and volume of transfer in the fall of 1963 and information about policies governing the admission and evaluation of transfer students were obtained from about 600 four-year institutions which are members of the Association of American Colleges.[1]

Review of Conditions in 1960

Policies governing transfer which were in effect in 1960 were summarized in the first report of the transfer study.[2] The catalog statements of admission policies were found to vary widely in terms of both the degree of specificity of the standards and the amount of information taken into consideration in making an admissions decision. At the same time, the practice of admitting all students who had earned at least a C average in junior college prevailed in most of the four-year institutions. Furthermore, a number of the colleges admitted transfer students whose junior college averages were below C, based on all work attempted, although few catalog statements contained provisions for the admission of such applicants. Some type of test score information was required of applicants for transfer by more than half the participating institutions but there was little or no evidence that the information was used either in making decisions about applicants with satisfactory grades or in advising new students with advanced standing.

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[1] Partial findings were reported in a paper presented at the Princeton University Conference on the College Dropout and the Utilization of Talent, October 8-9, 1964. Additional findings will be reported elsewhere.

[2] Cooperative Research Project No. 1133. D. M. Knoell and L. L. Medsker, Factors Affecting Performance of Transfer Students from Two- to Four-Year Colleges: With Implications for Coordination and Articulation. Center for the Study of Higher Education, University of California, Berkeley, 1964, pp. 167-173.

Variations were also found in the policies governing the acceptance of junior college transfer credit. The maximum amount of credit which could be transferred ranged from 60 to 72 semester hours, with most institutions accepting an amount equal to approximately one-half the total unit requirement for the baccalaureate degree. No uniformity among institutions was found in the procedures for evaluating course credit earned in junior college or for recording such credit on transcripts. Most colleges awarded transfer credit for courses in which grades of D were earned, if the overall grade-point average was at least C, but a number of the institutions refused to do so on the grounds that a D grade did not represent satisfactory work. While many four-year colleges recorded the junior college grades and/or averages on their own transcripts, there was almost complete congruity in the practice of disregarding these grades in computing cumulative averages for use either in imposing penalties, e.g., academic probation, or in awarding the degree.

Because of this practice, most of the junior college students transferred with zero grade-point balances and were required to earn averages of C or better in the first and subsequent semesters after transfer, in order to remain in good academic standing. In many colleges, transfer students who failed to earn a C average in their first semester were subject to dismissal at the end of the year, unless they were able to improve their grade-point averages substantially during the second semester. Little or no evidence was found of deliberate discrimination against transfer students in the application of retention standards, compared with treatment given native students. However, many of the junior college students had to make a rather difficult adjustment when they transferred, both to a different academic atmosphere and to living away from home for the first time. This made them more likely than the native students to earn grades which would cause them to be placed on academic probation and to be subject to dismissal. In the meantime, the native students who survived the screening which took place in the lower division were improving their grades as they moved into the upper division and enrolled in courses in their major fields.

The major goal of most articulation activity in 1960 was the improvement of high school-college relations, rather than relations between colleges. College-level programs of articulation which were in operation at that time tended to involve only the major state university and the public junior colleges, rather than all two- and four-year colleges in particular states. This was a rather logical scheme since the major flow of transfer students was then to the major state universities. Too, the junior colleges were more inclined to pattern their programs after the lower division offering of the state university than those of other types of colleges. California was a notable exception in 1960 to this unilateral type of articulation at the college level, although the university also conducted its own extensive program of articulation with the junior colleges.[3] Expansion of articulation programs at the college level was expected to take place in the 1960's as a larger proportion of the junior college transfer students transferred to what were formerly teachers colleges and to the rapidly expanding other state universities.

The situation in 1960 might then be characterized briefly as one in which students with a C average in junior college had a wide choice of colleges to which they might transfer with full credit for about two years' work, at least in the 10 states in which the study was conducted, but in which they tended to choose the major state university. Since there was relatively little selectivity among those with C averages, a rather large number of transfer students were admitted to universities in which they had little probability of achieving their degree goals under the retention and graduation standards which were in effect. Problems of mis-matching of student and institution occurred most frequently at the major state universities and least often at the teachers colleges.

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[3] See pages 86-87 for a detailed description of articulation in California.

Recent Changes in Admission Policies

The impression that the quality of freshmen entering four-year colleges had improved since 1960 was verified by the information supplied by the institutions which participated in the study. Changes reported at the freshman level were both more numerous and more striking than changes relating to the transfer students. An analysis was made of the freshman changes because of evidence that the success of transfer students is dependent to a considerable degree upon the quality of the native students with whom they must compete in the upper division. It might be expected that competition would then increase as a function of improvements in the quality of the entering freshmen, unless there was a comparable improvement in the students admitted with advanced standing.[4]

Changes at the Freshman Level

All but seven of the participating institutions reported that some type of change in admission policy or practice had taken place at the freshmen level between 1960 and 1964. The specific changes might be grouped as follows:

1. Increased selectivity, in terms of the minimum high school grades and/or aptitude test scores which are required for admission;

2. Improvement in the quality of students through better counseling or self-selection, or both;

3. Changes in admission requirements without a specific increase in standards, e.g., requiring all applicants to submit aptitude test scores without making specific use of the information thus obtained.

A few colleges reported stricter adherence to existing standards by reducing or eliminating the exceptions made in admitting students. None of the seven institutions which reported no change would be regarded as selective. Four are located in a single state where all high school graduates are legally eligible for admission to the public college of their choice, without regard to their high school achievement.

About one-third of the institutions reported some type of change in their minimum standards for clear admission at the freshman level, e.g., the requirement of a high school grade-point average of at least C+, a high school rank above the bottom third of the class (or half, depending upon the institution), and a specified pattern of academic subjects in high school. The private universities and a few of the public colleges failed to cite specific standards but reported that they were more selective than previously. In most instances they had a larger number of qualified applicants for freshman admission from which to choose their quota of new students. The public colleges and universities continued to rely much more heavily on the high school record than on test scores in admitting freshmen, although most institutions required all applicants to submit test results as a condition of admission or registration. Only two colleges reported what they regarded as a significant increase in standards involving the use of test scores. An unknown factor at the institutions which raised their freshman standards is the extent to which they continued to admit students as exceptions to the rules, on the basis of compensating factors or during the spring and summer terms when space was available.

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[4] Many universities without selective freshman admission policies have often screened out large numbers of students with low academic ability during the lower division, with the result that the quality of native students with whom the transfers competed for grades as juniors was quite high. Since there is little evidence that screening will become any less severe as the quality of the freshmen improves, it may be expected that the transfer students will have to compete with an increasingly select group of native students.

Six colleges reported improvement in the quality of their freshmen without an increase in their standards. Three cited large increases in mean scores earned by their freshmen on the Scholastic Aptitude Test, while a fourth reported an increase in the median high school average presented by the freshmen. The remaining changes involved either the addition of a testing requirement, the results of which were to be used for research or counseling purposes, or a reduction in the number of applicants who were admitted as exceptions. Thus, a majority of the participating institutions which were largely non-selective in 1960 reported a significant improvement in the quality of their entering freshman classes by 1964, as a result of higher standards, increased selection among qualified applicants, better counseling, or a combination of devices.

Changes at the Transfer Level

More than half the participating institutions reported what they regarded as significant changes in the quality of their transfer students, in some cases as a result of higher admission standards. A number of respondents noted additional improvement which they believed to be the result of better preparation in the junior colleges and from increased articulation activity involving the junior colleges. Most of the changes in standards involved an increase in the junior college average required for transfer. Three institutions reported that they required all applicants for transfer to earn grade-point averages above C. One of the three adopted a standard of C+ (2.25) for clear admission, but permitted applicants with averages between 2.00 and 2.24 to petition for admission as special cases. Until recently this university granted probationary admission to applicants with averages as low as 1.5 (C-), provided they had earned no more than 40 hours in junior college. A second university which has recently adopted a standard above C has a somewhat more flexible policy involving a goal of 2.5 as the minimum acceptable average but with a present, more realistic standard of 2.3, below which some exceptions are made. The third institution in this category adopted a somewhat more restrictive policy by raising the minimum average to 2.4 and then admitting only a limited number of applicants with averages above that floor.

Other institutions which raised the minimum grade-point average which they required for transfer tended to adopt somewhat flexible policies which differentiated among transfer students with varying backgrounds. A few examples are:

1. Applicants who were ineligible for freshman admission at the time they graduated from high school, on the basis of poor scholarship or subject deficiencies or both, must complete at least 56 semester hours with a grade-point average of 2.4 or better before transfer and may have no more than two high school subject deficiencies unsatisfied.

2. Applicants with fewer than 54 semester hours will not be admitted for the fall term unless they have a grade-point average of at least 2.5; however, admission to other terms is open to all applicants with at least a C average, with no specification of units. This policy helps equalize enrollments throughout the year and encourages students to remain in junior college until the completion of their two-year programs.

3. Applicants with fewer than 30 semester hours must qualify for freshman admission to the university on the basis of their high school record, i.e., present a high school average of at least 2.5 and complete a particular subject pattern. Applicants with 30 units or more must have earned at least a C average in junior college and have removed any high school subject deficiencies they had when they entered college. High school subject and scholarship requirements for freshman admission were increased at the same time.

4. Two state institutions require applicants for transfer who were ineligible for freshman admission to complete 60 semester hours in junior college with a C average or better. Standards for freshman admission are based on high school grades, rather than a specific subject pattern.

5. Other state institutions reported that they now reserve the right to refuse admission to transfer students with poor high school records who had spent less

than a full year in junior college, but they did not adopt specific standards or regulations.

6. A private university now requires transfer students to present grade-point averages of from 2.25 to 2.50 for admission to its various upper division schools.

7. A state university system is considering the adoption of an achievement test program to be administered to both native and transfer students at the end of the sophomore year, as a condition of entrance into the upper division.

8. Relatively minor changes reported by other institutions involved different methods of computing the transfer grade-point average and stricter adherence to admission standards already in existence.

Changes in admission standards for transfer students were usually based on findings from local studies in which success after transfer was related to junior college grades, numbers of units earned in junior college, and eligibility for university admission at the freshman level. The four-year colleges generally expected transfer students to have the same type and quality of high school preparation which they required of freshmen applicants. Few universities appear to have tested this equality. However, the University of California has done so each year by comparing the University averages earned by transfer students who would have been eligible for freshman admission with those earned by students who could not have entered the University directly from high school. The finding of approximately equal grade-point averages and percentages of students below C for the "eligible" and "ineligible" groups has been regarded as satisfactory evidence of the validity of the differing admission standards which have been established for the two groups.[5]

Changes in Other Policies Affecting Transfer Students

Relatively few changes were reported in policies governing the evaluation and acceptance of transfer credit, retention standards, and residence or graduation requirements. Since no independent check was made of catalog or other statements, it is not known whether additional changes took place which were not regarded as important by the respondents, or whether the situation was in fact static. Most of the changes in methods of evaluating credit were in the direction of liberalizing the provisions for the junior college transfer students. The California State Colleges raised the maximum amount of credit they would accept for transfer from 64 to 70 semester hours, with no corresponding increase in unit requirements for the degree. Other institutions reported what appear to be relatively minor changes in the kinds of credit which they would accept (or reject, as the case may be), e.g., courses in the Bible as literature and lower division extension courses from accredited colleges. Two private universities liberalized their practices in applying transfer credit to satisfy some highly specific course requirements for their degrees. However, one public university instituted a lower division General Studies Program with course requirements which may be difficult for some transfer students to meet. New students with fewer than 60 hours of transfer credit will be required to enroll in the program; those with 60 hours or more must satisfy the General Studies Program requirements but may enroll in the upper division college of their choice. Only one university became less liberal during the follow-up period, by ceasing to accept transfer courses in which a grade of D was earned.

Changes in standards for retention were more marked at the freshman than the upper division level. The change at the freshman level was usually in the direction of placing students on probation earlier than under former standards, thus making them subject to dismissal somewhat earlier. Stricter adherence to existing policies for imposing probation and dismissing students was reported by a number of institutions as applicable to both native and transfer students at all levels. Still others reported some lowering of the grade-point average which served as the cut-off for taking such actions.

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[5] The tacit assumption is made that the "eligible" students perform as well after transfer as the native students. However, both transfer groups experience a drop in grades immediately after transfer, at a time when the grades of the native students are usually improving. As a result, the upper division grades of the "eligible" transfer students are lower than those of the natives, at least during the first year after transfer.

Although there was a considerable amount of curriculum change during the period from 1960 to 1964, apparently only three changes in degree requirements were regarded as sufficiently important for transfer students to merit their inclusion in the reports by the institutions. One major state university increased its residence requirement for the degree from 30 to 60 semester hours, or to about two full years. A second university reported an increase in stress on English, foreign language, and quantitative reasoning ability in the college of arts and sciences, which was expected to create some problems for transfer students. Finally, one teachers college initiated a new liberal arts degree program for transfer students from the community colleges, in particular. The general education portion of the program is highly prescribed and efforts are now being made to work out parallel programs with nearby junior colleges.

Developments in Articulation and Coordination

Increased attention to articulation at the college level was probably the most notable change which took place during the early 1960's in the participating colleges. At the same time, formal coordination at the state level among collegiate institutions was developing in connection with long-range planning for higher education in the various states. The goal of state-wide coordination and master-planning has been stated variously as the orderly development of opportunity in higher education, while making the most prudent use possible of the state's economic and manpower resources. As a result, coordination more often deals with problems of institutional budgets and building programs than with students and their courses of study. However, as coordinating agencies begin to be concerned with admission requirements and curriculum, they may overlap with the more informal articulation machinery of the various two- and four-year colleges. It may be possible to distinguish between formal coordination and informal articulation on the basis that the former represents the interests of the state and its citizenry, while the latter serves the interests of the students and the faculties of the collegiate institutions. However, only time will tell what the distinctive roles, functions, and areas of concern of the two groups will be, and whether the two types of machinery are necessary and desirable.

The need for greater articulation between and among colleges became apparent as the volume of transfer students to all types of colleges increased. Articulation became an active concern of some of the smaller institutions for the first time, as they began to compete with the major state universities for junior college transfer students. There were many more transfer students to be accommodated as a result of the growing proportion of lower division students who were attending two-year colleges. Many new junior colleges were being established and existing colleges were expanding and becoming stronger as a result of such trends as:

1. The separation of the junior colleges from high school or unified school districts and the creation of new districts with their own governing boards;

2. The emergence of the junior college as a multi-function institution, with both transfer and technical-vocational programs, as well as community service responsibilities;

3. Recognition of the junior college as a full partner in higher education;

4. Increased recruitment of faculty from graduate schools, rather than from the ranks of experienced high school teachers;

5. Greater concern and planning for junior colleges at the state level.[6]

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[6] Leland L. Medsker, Junior Colleges and Technical Institutes: Changes Within Institutions. Paper presented at the 47th Annual Meeting of the American Council on Education, San Francisco, October 1, 1964.

Institutional Changes

Among the various types of changes reported, increased visitation to the junior colleges was noted by the largest number of four-year institutions, followed closely by increased conference and/or committee work. Visitation in many cases involved members of the faculty and academic administration, as well as directors of admission, counselors, and liaison officers who had primary responsibility for junior college relations. Increases were reported in both directions, i.e., junior college staff members coming to the four-year college campuses, as well as university team visits to the junior colleges for conferences with staff and prospective transfer students. Several respondents reported that more favorable attitudes toward junior college instruction were resulting from visits involving faculty members from both types of colleges. Some also noted that visitation had been extended to all junior colleges in their states, where formerly such visits were limited to a few junior colleges in nearby service areas.

Increased conference activity has resulted from the work of new state-wide committees, in some instances, and from the efforts of particular colleges, in others. Georgia, Florida, and California provide examples of state-wide curriculum activity designed to improve articulation among the colleges by voluntary means. In other states, the leadership in articulation of curriculum tended to come from individual four-year institutions, particularly the major state universities after which the junior colleges often modeled their programs. Under the latter type of arrangement, other four-year colleges sometimes sent observers to conferences dealing with problems in certain subject-matter areas. There appears to be a trend toward multi-institutional conferences for reaching general agreements and exchanging information, which are supplemented by agreements between pairs of colleges concerning equivalent or parallel courses to satisfy baccalaureate degree requirements. The fields of greatest concern in articulation have been engineering, the physical sciences, mathematics, business administration, and foreign languages.

The change mentioned next most frequently by the participating institutions was the addition of a staff member for liaison with the junior colleges. The duties of this staff member often included the counseling and admission of junior college transfer students, arranging various types of conferences, visitation, and the preparation of materials designed to improve articulation. Michigan and Washington are two states with quite marked increases in staffing in the individual institutions, with the goal of achieving better working relationships with the junior colleges. Georgia and California tended to improve staffing at the system-wide level, Georgia under the Board of Regents of the University System and California under both the University and State College systems and, to some extent, in the Coordinating Council for Higher Education. In the major universities the junior college liaison officer generally serves on the staff of an office of school and college relations, while in the smaller institutions the officer was usually a member of the admissions staff. Some have been drawn from the faculty ranks, with subject-matter specialties to which they expected to return after limited tours of duty in administration, while others with only weak subject-matter ties have viewed their jobs as first steps on the administrative ladder. Only occasionally have the new liaison officers had relevant junior college experience, although a thorough understanding and appreciation of the role of the junior college in higher education would appear to be necessary attributes for the position.[7]

A fourth area of change and likely improvement is communication with the junior colleges, by means of informational brochures, course equivalency lists, guidance materials, and reports of studies of junior college transfer students. A number of institutions have developed or improved their systems of reporting to the junior colleges on the success of their transfer students, as part of their change to electronic data processing for record-keeping operations. Some merely provide the junior colleges with first-semester grade slips for new transfer students. Others make fairly detailed analyses of the grade-point achievement of all new undergraduate transfer students, in relation to their prior college performance and to their eligibility for freshman admission from high school.

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[7] An appointment which bridged the junior-senior college gap is the Coordinator of College Relations at the University of Washington who was a junior college president before assuming his present role.

A type of communication which was developed largely during the study period is the course equivalency list. Universities in Washington and elsewhere prepare and publish annually a list of the courses offered by each junior college which are regarded as equivalent or parallel to their own and/or which may be used to satisfy various types of degree requirements. A similar type of publication is prepared by the Los Angeles City school system, which is a list of courses offered by the several junior colleges in the system which are accepted by the various four-year institutions in southern California, in satisfaction of their particular degree requirements. The various lists are used by counselors and advisors in the junior college, in assisting students to plan transfer programs, but are not usually made available to the students themselves. Wholehearted approval of this type of communication is lacking because of the feeling that it may bring about an undesirable degree of rigidity in the curricula of both the two- and four-year colleges by discouraging experimentation and innovation.

Still another type of communication which has become more popular during the study is the special admissions brochure for the recruitment and/or guidance of prospective transfer students, particularly from junior colleges. The Universities of Michigan, Texas, and Miami have all prepared special materials designed to tell such students and their counselors what the institutions are like and what special requirements and policies the students should be familiar with in making plans for transfer. A fourth type of communication is the periodic newsletter which is prepared by a number of universities, including Florida and Washington State, for distribution to the junior colleges. The newsletter serves both to inform the junior colleges about university developments and changes of particular interest to them, and to disseminate information about junior college programs and personnel. In California a similar function is served in part by California Notes, a monthly newsletter sent by the University to both high schools and colleges, and in part by the newsletter of the California Junior College Association. Finally, proceedings from conferences on problems in particular subject-matter areas also serve an important communications function for faculty and staff who do not participate in the conferences. California provides a striking example of a state where it would be impractical to have representatives of all 100 public colleges and university campuses serve on each articulation committee. However, the information exchanged and the agreements reached should be communicated to all colleges since the flow of transfer students is to an ever increasing number of four-year institutions.

Changes at the State Level

There appears to be an irreversible trend in 1964 toward increased state-wide coordination of higher education, including the junior colleges, which will eventually have an effect on the flow of transfer students among institutions. Several states, notably California, New York, and Illinois, have developed new master plans for higher education as one aspect of this coordination. New proposals for coordination have also emerged in Michigan and Texas. Brief descriptions of several recent developments in states which participated in the study are given as illustrations of some of the major changes which are occurring at the state level in the coordination of higher education.

California.--The adoption of the state Master Plan for Higher Education by the legislature in 1961 included the establishment of a Coordinating Council for Higher Education to replace the voluntary Liaison Committee of the University Board of Regents and the State Board of Education. Major changes under the Master Plan included the formal recognition of the junior colleges as full partners in higher education, the inclusion of representatives of the private segment of higher education on the Coordinating Council, and the establishment of the State Colleges as an independent system with its own Board of Trustees and staff for state-wide coordination. The functions of the Coordinating Council are purely advisory and its only power is one of being able to require the public institutions to submit data on their operations and costs. The accomplishments of the Countil to November, 1963, have been summarized by Holy,[8] who has served as staff to both the Council and its predecessor, the Liaison Committee. One of the most important areas of coordination involving junior colleges in which the Council has taken action thus far is the certification of the adequacy of junior college opportunities in certain geographical areas in which new public four-year colleges have been established. Such certification must be made before the new colleges are permitted to offer lower division programs, in order to make sure that the communities in which the state institutions are located do not neglect their obligation to develop junior college programs. A comprehensive status study of various aspects of the California junior colleges has recently been made for the Council. In two separate developments early in 1965, legislation was introduced and a recommendation was made by the Council staff that a separate state board be established for the junior colleges, which would result in their removal from the State Department of Education. No action had been taken by the time the study was completed.

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[8] T. C. Holy, "The Co-ordinating Council for Higher Education in California: A Review of Its First Two Years," The Journal of Higher Education, June, 1964 (35:6), 313-321.

The Council has also established technical committees on admission, retention, and transfer; faculty supply and demand; continuing higher education; and costs and physical plant facilities, each with representatives from the various segments of higher education. In the area of curriculum, the Council so far has limited its activity to the areas of continuing and graduate education, the latter in approving new professional schools on various University campuses. The relationship of the Council to the older, voluntary articulation machinery has not yet been tested, since no real duplication or conflict between their functions has been encountered during the Council's rather brief existence.

New York State.--Early in 1961 a second master pl[illegible] for higher education was submitted to the governor and the Board of Regents by the Board of [illegible]ustees of the State University of New York, which is in effect a system of public two- and four-year colleges without a central campus.[9] Some significant proposals in the 1961 master plan which are of interest in the present transfer study are:

1. The establishment of a number of new comprehensive community colleges in areas not served by such institutions;

2. The expansion of curricula in all public two-year colleges (except the Fashion Institute of Technology), to include university-parallel programs in the liberal arts and sciences;

3. The expansion of curricula in the colleges of education to include upper division programs in the liberal arts and sciences and the eventual conversion of these colleges to multi-purpose institutions.

In addition a vastly increased program of financial aid to New York State students was approved by the legislature in 1961, much of which was available to undergraduates in both two- and four-year colleges. At least six new community colleges have been established since 1960 but the recommendation concerning the expansion of curricula in the two- and four-year colleges has been implemented rather slowly. Although plans have been made for the new liberal arts programs in the teachers colleges and, in some instances, inaugurated, the number of students in liberal arts who are transferring between public two- and four-year colleges has remained small. Many articulation problems must be solved before the volume may be expected to increase very much. In the meantime, a state-wide articulation committee has been formed with representatives from both two- and four-year colleges. A conference on transfer problems was held in the spring of 1963, in which both public and private institutions participated.

Late 1964 saw the development of new plans and completion of new studies of higher education in New York State, for its State University of New York, for the Board of Regents of the University of the State of New York, and for its Legislature. Approval of various proposals in the Regents' plans, which will have the most far-reaching effect, will be sought early in 1965. As is true in California, the next decade will undoubtedly be a critical one in the coordination of higher education in New York State, as expansion of both institutions and curricular offerings takes place among the two- and four-year colleges.

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[9] The Master Plan Revised 1960. Albany: State University of New York, 1961. See also, Meeting the Increasing Demand for Higher Education in New York State: A Report to the Governor and the Board of Regents. Albany: Board of Regents, State Education Department, November, 1960.

Illinois.--A Board of Higher Education was established by the General Assembly in 1961 as the coordinating agency for the state universities, which are in turn under the more direct jurisdiction of three separate governing boards. No formal provision was made in the enabling legislation for coordination between the two- and four-year institutions, although the junior colleges obviously could not be ignored in the overall planning which was the Board's primary responsibility. A master plan for higher education has recently been completed in Illinois, which will be submitted to the General Assembly in 1965 with recommendations for appropriate legislation to implement certain portions which require such action.[10]

One of the most significant recommendations of the master plan calls for the establishment of a state system of junior colleges which would remain under local control but be coordinated through a new state junior college board. The recommendation was also made that the Board of Higher Education be expanded to include the chairman and one member of the new junior college board (together with two new members as citizens at large), and that the junior college board have the same relationship to the Board of Higher Education as that of the present governing boards of the several universities. Recommended powers of the junior college board include the development of articulation procedures with the universities, in order to facilitate transfer between two- and four-year institutions, and the conduct of continuing studies of students in transfer and other programs. The master plan also contains specific recommendations concerning admission to the public institutions, with the implication that the Board of Higher Education should take appropriate action to insure the free flow of transfer students between institutions in the future.

Illinois has not had a highly developed plan for articulation among all colleges, although the University of Illinois has conducted its own program of articulation with the junior colleges for a number of years. Since most of the effort of the Board of Higher Education since its inception has been devoted to the development of the master plan, it may be too early to predict what kind of additional machinery for state-wide articulation of an informal nature will be needed to supplement the work of the Board in coordinating higher education.

Michigan.--Provision has been made in Michigan's recently adopted constitution for a new State Board of Education, which has been given responsibility for the general planning and coordination of all public education, including the two- and four-year colleges. A new state board for public community and junior colleges was also provided for in the constitution, to advise the State Board of Education concerning planning, supervision, and the budgetary needs of locally controlled two-year colleges. The governing boards of the state-supported four-year institutions were also given constitutional status as bodies corporate but no provision was made for coordination among them, except insofar as the general responsibilities of the State Board of Education include the overall planning for and coordination of higher education.

In the past, there has been little effective coordination in Michigan among and between the two- and four-year colleges, except for the somewhat limited activity of the Coordinating Council for Public Higher Education and the Council of State College Presidents. A special committee which was charged with studying the problem of university branches has recently recommended the creation of an Advisory Council for Planning and Coordination of Higher Education, which would parallel the junior college board. A very high priority was given by the committee to the preparation of a new master plan for higher education in Michigan, with the recommendation that the proposed Council be given the assignment to develop it. So little time has elapsed since the adoption of the new constitution that there has been no accrual of experience from which to draw generalizations about how coordination will work in Michigan under the new and proposed boards.

Texas.--At the present time the public four-year colleges and universities in Texas all fall within the jurisdiction of the Texas Commission on Higher Education, while the locally controlled junior colleges are responsible to the State Department of Education of the Texas Education Agency. The four-year institutions are governed by a number of different boards, including the Board of Regents for the University of Texas, with its several campuses and units; the Board of Directors of the Texas A and M System; the state teachers college board; and several other boards of directors and regents. However, only recently the Governor's Committee on Higher Education recommended the creation of a strong central Coordinating Board for Education Beyond the High School, which would assume the duties of the present agencies as they relate to higher education.[11] The new board would not replace the existing governing boards for the several institutions but would coordinate and transmit to the legislature both the budgets of the colleges and all matters requiring legislative action. The recommendations of the Committee concerning coordination will be submitted to the legislature in 1965.

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[10] The Illinois Board of Higher Education, A Master Plan for Higher Education in Illinois. Board of Higher Education, Room 600 State House, Springfield, July, 1964.

The Committee's recommendations also include the broadening and strengthening of the present system of comprehensive junior colleges. Local boards are to be continued as the chief policy making and administrative bodies for the colleges, within a framework to be adopted by the Coordinating Board. The Committee also recommended that the state pay all junior college instructional costs for courses approved by the Board. In Texas, as in Illinois, articulation between the two- and four-year colleges has not developed according to any fixed state-wide pattern. The Texas association of registrars and admissions officers has been active in the field and may continue to play an important role in facilitating transfer between colleges. However, it was the conclusion of the Committee that a strong coordinating agency was very necessary if Texas was to have the quality of higher education which it deemed appropriate to the state's needs and resources.

On-Going Articulation Programs

A number of the universities and states which participated in the study have had some type of articulation program in operation for a period of years. Certain of these programs will be described in some detail as noteworthy examples of practice, rather than as models to be imitated, since each was developed in response to particular needs, resources, and conditions. Programs were found to differ widely with respect to the following factors:

1. The nature and scope of the articulation problems considered;

2. The machinery for reaching agreements, ratifying them, communicating them to appropriate personnel, and enforcing those which are reached voluntarily;

3. The extent of representation from the various segments of higher education, secondary education, professional organizations, and education agencies;

4. The types of college personnel involved in articulation programs, e.g., faculty representatives, counselors, and admissions officers;

5. The role of the private segment of higher education in articulation programs involving primarily the public institutions;

6. State-wide involvement vs. articulation between pairs of colleges (or a particular four-year college and the two-year colleges from which it draws its transfer students).

The four major areas in which most articulation problems appear to fall are the student, the curriculum, student personnel services, and facilities and resources. A few examples of problems in each of these areas are:

The student: How much flexibility should there be in the standards for admitting transfer students with advanced standing, particularly those who have earned C averages in junior college? What weight, if any, should be given to differences among junior colleges in grading standards, in making decisions about admitting transfer students? What counseling should be given high school students with poor records who want to work for baccalaureate degrees? What type of courses should they take in junior college? How long should they remain before transferring to a four-year institution? How well should they do in junior college, if they are to have a reasonable chance of succeeding after transfer?

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[11] Education: Texas' Resource for Tomorrow. Report of the Governor's Committee for Education Beyond the High School. State Capitol, Austin, Texas. August 31, 1964.

The curriculum: How much institutional autonomy can be developed when there is a considerable volume of transfer between two- and four-year colleges? How can the freedom to innovate and experiment be preserved in both types of colleges? How much and what kinds of course credit should be accepted from junior college? What are reasonable grading standards for junior college transfer students, recognizing differences in standards at the various four-year colleges to which they will transfer?

Student personnel services: What kind of articulation can be achieved in the administration of scholarship, loan, and other financial aid programs? What kinds of information need to be exchanged among colleges concerning their programs, the characteristics of their students, academic standards, services, and other matters which are not ordinarily treated in any detail in catalogs?

Facilities and resources: What priority, if any, should be given to the admission of junior college transfer students under conditions of limited facilities and restricted enrollments? What kind of joint planning can be done to serve the increasing number of high school graduates who want to attend college?

Description of State Programs

California undoubtedly has the most complex machinery for articulation of all the states in which there is a considerable volume of transfer between colleges. Far greater dependence has been placed by California on the junior colleges for lower division instruction than by other states, even before the recent Master Plan for Higher Education. Articulation in California is complicated by the very large number of pairs of two- and four-year colleges between which transfer can and does take place. The heart of the state-wide voluntary machinery is the so-called Articulation Conference, which is the name given to the cooperative activities of representatives of the Junior College Association, the Association of Secondary School Administrators, the State Colleges, and the University. The objective of the Conference is "to coordinate publicly supported education so that California students will be afforded the quantity, quality, and variety of education commensurate with their abilities so that when desirable they can move readily from one segment to another. To achieve this end, the members or committees...meet to exchange points of view, to identify problems, and to develop and recommend to appropriate authorities...methods for improving articulation."[12] The Conference has existed as a quadripartite group since 1944. It is a voluntary organization of representatives appointed by the various segments of public education, with no authority to make binding agreements or commitments. Staff from the State Department of Education also participate in the various activities and a representative of the legally constituted Coordinating Council for Higher Education has recently been added to the membership. A 15-member administrative committee arranges programs for the meetings, acts as a clearing house for matters referred by member institutions and outside agencies, establishes and receives reports of committees of the Conference, performs follow-up functions on agreements involving several segments, and serves generally in a coordinating capacity.

Until recently the Conference met twice a year in joint session on matters of common concern, e.g., state-wide testing programs and special provisions for honors, and in half-day sessions on problems of interest to various pairs of the four segments of public education. Only annual meetings are held now, because of a lack of material of joint concern for more frequent meetings. Much of the work of the Conference is done by committees whose membership extends far beyond the official representation to the Conference. Standing "liaison" committees have been established in the areas of agriculture, engineering, business administration, nursing, letters and science, and foreign language. In addition to committee meetings, the liaison groups have sponsored subject-matter conferences which large numbers of faculty members from the various colleges have attended. Special committees have been appointed for limited periods to work on problems involving foreign students, the training of college teachers, the revision of transfer admission requirements, and college advisement programs. Committee membership has been drawn heavily from the faculty ranks while official representation to the Conference and on the administrative committee tends to involve administrators at the policy-making level.

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[12] Mimeographed statement adopted by the Administrative Committee of the Articulation Conference, April 23, 1963. Los Angeles: University of California, Office of Relations with Schools, University Dean of Educational Relations.

The effectiveness of the Conference in reaching agreements has been limited because of the following problems:

1. Representation of the points of view of the approximately 100 public colleges in California is not always secured. Private institutions do not participate at all except as occasional observers. Each segment of public education is limited to nine representatives although the number of State Colleges is nearly twice this number and the number of junior colleges many times nine.

2. Representatives lack authority to make agreements although they are appointed officially by their associations or by the central administration for the particular system. There are no penalties when agreements are not kept.

3. There is a frequent failure to communicate agreements to all colleges and to the particular staff members who should implement the agreements, e.g., faculty, admissions officers, and others.

The Articulation Conference has been subjected in the last two years to a rather extensive study by its members, with some resulting changes in format and procedures. However, the Conference will undoubtedly retain its major function as a forum and clearing house for a wide range of problems of articulation among the public colleges and between the high schools and colleges. The Coordinating Council for Higher Education is still too new in California to have had much impact on the work of the Conference. It seems inevitable that the two groups will begin to overlap in their work on problems of undergraduate admission and transfer, curriculum, and instruction, once the Council has achieved some measure of success in coordinating the more obvious problems of budget review and campus development. In addition to participating in state-wide articulation and coordination through the auspices of the Conference and the Council, both the University and the State Colleges perform certain other articulation functions quite independently, a few of which will be described below.

Florida.--Articulation among the two- and four-year colleges is a major function of the Professional Committee for Relating Public Secondary and Higher Education in Florida. The Committee is an organ of the State Board of Education, with representatives from the secondary schools, the junior colleges, the five state universities, the Board of Control for the universities, the Institute for Continuing University Study, the State Department of Education, and the office of the State Superintendent of Instruction. It was established in 1957 when the volume of junior college transfer students was still quite small. Even in 1960, when the transfer study was started, the major flow of transfer students was from about 11 junior colleges to two state universities. Since then, the number of junior colleges has increased by more than 50 per cent and the state universities to which their students transfer now number five.

One of the major accomplishments of the Committee during its early years was the development of a policy governing the acceptance of transfer credit for general education programs. The policy serves both to encourage local initiative in curriculum development and to protect the junior college credit earned by the transfer students. It provides that students who have been certified by their junior college as having satisfactorily completed its prescribed general education program will not be required to enroll in additional lower division courses in general education after transferring to another Florida institution. The two main conditions which must be met are that the junior college should have published its general education program in its catalog, and that the program should include not less than 36 semester hours in such areas as communications, mathematics, social sciences, humanities, and natural sciences.

The Committee has also been instrumental in convening articulation conferences in several subject-matter areas, among them foreign language, science and mathematics, and business administration. The conferences have been planned and conducted by special committees, most of whose members are subject-matter experts. The major objectives of the conferences have usually been the identification of problems for articulation, the exchange of ideas and information about teaching in particular fields, and the establishment of machinery for follow-up activity. In addition to sponsoring conferences, the Committee has worked recently to secure the adoption of guidelines for transfer by the members of the Florida Association of Colleges and Universities. While private institutions are not represented on the Committee, their participation in conferences and their adherence to articulation agreements adopted by the public institutions have been noteworthy.

Georgia.--Since all public two- and four-year colleges in Georgia are under a single governing board, the needed machinery for articulation and coordination is considerably less complex than in states with different governing boards for each type of institution (or each college).[13] Much of the work involving articulation in Georgia is done by a number of administrative and academic committees of the University System Advisory Council. The academic committees represent the various subject-matter areas and draw heavily upon faculty from each institution for their membership. Administrative committees have functioned in the following areas: educational policy at the junior college level; records, testing, guidance, and standards of scholarship; general extension; academic personnel; and non-academic personnel. Membership on these committees ordinarily has included presidents, deans, and other administrators. One of the best examples of coordination achieved in the Georgia System is the state-wide program of pre-college testing and guidance which was adopted in 1957. A guidance committee was established at each college in the System, with representation on a state-wide committee. The program was organized and administered through the Regents' Office of Testing and Guidance. A bulletin for counselors and admissions officers is prepared annually by the Office which contains formulas for predicting freshman grades for men and women at each University System college; freshman class profiles of high school averages, scores on the Scholastic Aptitude Test, and predicted freshman averages; and other useful information for counseling students about their choices of college.

In addition to these activities, comprehensive longitudinal studies are made for and with the help of the various colleges, using both predictive indices and actual grades earned during the undergraduate years. The testing and research programs have resulted in improved selection of students in the several colleges of the System. Another example of coordination in the System is the program described in the monograph on Educational Opportunities and Financial Aid in the University System of Georgia,[14] which includes a considerable amount of information on programs of study, scholarships, loans, and employment opportunities afforded by each college.

University Programs of Articulation

The Universities of California, Illinois, Michigan, and Washington, among others, have all developed fairly extensive programs of articulation with the junior colleges in their states, which supplement their state-wide articulation activities involving other public four-year institutions. The strength of the university programs may have developed as a result of the former practice of some in accrediting the junior colleges in order that their students might transfer to the university. Illinois, for example, made this type of accreditation of junior colleges (and other Illinois institutions) until September, 1959, when the colleges were given a five-year period in which to secure regular accreditation by the regional association. In each state, the major flow of transfer students has traditionally been to the major state universities. As a result of this pattern, the junior colleges have attempted to secure closer articulation of their programs with those of the university than with other four-year colleges.

The university programs usually include visitation to and by the junior colleges; the publication of informational materials concerning the curriculum, admission requirements, acceptance of transfer credit, and other practices; follow-up studies of the success of junior college transfer students; and annual conferences for counselors, faculty, and other junior college staff members. The conferences are usually of one or two days' duration, held on the university campus, and attended by various staff members from the two- and four-year institutions. Most of the conferences feature a half-day session of interviews involving junior college counselors or administrators and their former students. The university prepares lists of such students and brings together their recent transcripts, grade reports, interview questions, summary statistics on transfer student performance, and other information. The junior colleges, in turn, may request their former students to make certain written evaluations in connection with the interviews. As a rule, the conferences also include greetings and expressions of support for the junior colleges from appropriate university officials, and announcements and explanations of changes in university programs and practices which affect them. Unique features of some conferences are half-day sessions with faculty members and deans from the fields of business administration, engineering, and other areas with particular articulation problems; discussion sessions based on reports of various academic deans on programs, trends, and developments in their areas; and an afternoon "gripe" session with the deans of the various university colleges as discussion leaders, junior college personnel as recorders, and university staff members as consultants.

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[13] However, a new type of junior college has recently been established in Georgia which is under county auspices. Implications for what has been a unitary system are not yet clear.

[14] Atlanta: Regents of the University System of Georgia, Office of Testing and Guidance, August, 1962.

The conferences appear to have certain value as public relations devices for the host universities and, at the same time, they serve the useful purpose of bringing faculty and staff from the two types of colleges into a face-to-face situation. Such encounters may result in better attitudes toward the junior colleges (and toward the students who transfer from them), as university faculty members find that they share professional interests with the junior college faculties. At their worst, the conferences may deteriorate into a situation in which the university staff merely announces the changes it intends to make in its various programs, which the junior colleges are expected to imitate as best they can. However, good program articulation apparently can be achieved through committee work and conferences, if the intent of all parties is to cooperate in curriculum planning and revision, not to dictate to one another.

Examples of Specific Practices in Articulation

A number of rather promising practices should be mentioned as worthy of consideration by institutions which are either developing or trying to improve their articulation with the junior colleges. The first is the annual spring conference of student government associations of the Pennsylvania State University and its Commonwealth Campuses, which is held under the auspices of the Office of Student Affairs. Student leaders from the two-year colleges meet with leaders from the main campus to discuss problems of mutual interest, plan special workshops and summer conferences, confer with University staff members, and exchange ideas. The conference serves the somewhat unique purpose of organizing and integrating the student leadership on the branch campuses in such a way that transfer students are able to assume important roles when they move to the main campus, without the usual frustrating period of adjustment after transfer. The entire area of student activities is one in which little effort has been made by most universities to assist transfer students from junior college. Many of these students have developed leadership skills in junior college which they are seldom able to put to work after transfer, since most of the leadership positions are usurped by the native students. The one exception noted appears to have gone far to equalize leadership opportunities through its spring student government conferences.

The University of Miami has recently expanded its articulation program involving the Florida junior colleges, partly in response to the recent establishment of the Miami-Dade County Junior College and the Florida Atlantic University in its part of the state. Recent graduates of the new junior college and their parents were invited to the campus last year for lunch and a two-hour briefing by the University deans and other administrative staff. Furthermore, the president of the new junior college was invited to co-chair with the president of the University an all-day meeting in which administrators from the various East Coast Florida junior colleges participated in a discussion of transfer and articulation problems. A third feature of the program was the establishment of a number of new scholarships which are reserved for graduates of junior colleges. These scholarships are awarded on the basis of nation-wide competition but they undoubtedly serve to make opportunity available to a number of Florida transfer students who could not otherwise continue their education beyond junior college. The University, though a private institution, is thus attempting to serve the fast-growing public junior college population in Florida, as well as the private junior colleges in other states whose graduates want to transfer to a four-year institution.

Still another promising practice is the "all college day open house" which is held annually at the A and M College of Texas at College Station. Junior college students and their instructors are invited to the campus early in the spring each year, to find out first-hand more about the college and its various programs. Guests are offered housing in the college dormitories, without charge, on the night before the conference. The program includes the customary welcome by the college administration, followed by group meetings with the deans and directors of the various programs. The afternoon is devoted to tours of the college facilities and/or conferences with A and M staff members concerning specific transfer or curriculum problems. The spring conference is planned for prospective transfer students and their instructors, rather than administrators. The latter group is invited to a separate fall conference, at which time attention is focused on problems of coordination at a different level.

Summary

Near the close of the second study an attempt was made to secure as current a statement as possible of the various policies, practices, and articulation programs which might affect the flow of transfer students from two- to four-year colleges in the 10 participating states. Such a statement was believed to be appropriate and desirable as a basis for the guidelines for transfer which are the ultimate goal of the research project. Since considerable attention had already been given in the first study to the policies in effect in 1960 which governed the admission, evaluation, retention, and graduation of transfer students, the focus in the second study was on policy changes which had taken place since 1960 and on articulation and coordination. The current status statement may be viewed as a distillation of the findings from the two studies.

Five major types of changes emerged from the responses of the participating institutions to questions about policies and conditions in mid-1964. First, there was a fair concensus that the quality of the entering freshmen in the four-year institutions had been increasing quite dramatically as a result of several factors. The ones mentioned most often were higher admission standards for freshmen, often where no requirements beyond high school graduation were formerly imposed; better high school preparation; and a larger number of qualified applicants to be considered for admission to a limited number of spaces at the freshman level. Improvement in the quality of the junior college transfer students was also noted, but to a lesser extent. Changes at this level were believed to be the result of better junior college preparation, fewer students admitted with low junior college grades, and generally improved relations with the junior colleges. A third type of change which is somewhat related to the second was the increased spread of transfer students to different types of four-year institutions, as the teachers colleges and others became multi-purpose institutions. Some of the diversion was the result of space limitations and of higher admission requirements in the universities, as well as increased opportunity offered by other types of colleges.

One of the most significant changes was in the level and quality of articulation among colleges after 1960. Staff was added at many colleges whose chief function was the improvement of relations with junior colleges. Articulation programs were expanded in a number of directions, to include multi-college activities at the state level, attention to subject-matter articulation, improvement of instruction, more studies on the performance of transfer students, and better communication. Finally, the period was characterized by vastly increased formal coordination of higher education at the state level, with the objective of expanding educational opportunity at reasonable cost. Articulation and coordination were seen as overlapping functions as both grew stronger but the focus of the former was on the student and his instruction, while the latter tended toward preoccupation with budgets and facilities.

There appears to be a strong need to evaluate the effectiveness of some of the articulation practices and programs which are now in effect, in order to give guidance to the colleges which are just embarking upon such programs. As the number of colleges and the volume of transfer students increase in the coming decade, the need for improved coordination, both formal and informal, will grow apace. Many of the current programs are the result of tradition or the interest of particular individuals, or both, rather than a systematic appraisal of needs and of techniques for achieving good articulation.

CHAPTER 7

FINDINGS AND CONCLUSIONS

Introduction

One of the most important findings from the first follow-up study of the junior college transfer students was that fewer than half who had transferred as juniors completed their baccalaureate degree programs at the end of two years, although most might have been expected to be able to do so. About half the students who did not graduate were still enrolled and a considerable number of the dropouts had plans to re-enter college at an early date. Another finding which had implications for further research was that while differences were small, the grades of the junior college students who graduated from the four-year colleges were significantly lower than those of the native students in the upper division. Although some disadvantage was experienced by the transfer students in making a difficult adjustment during their first semester after transfer, this did not appear to be a sufficient reason for their poorer performance. An important source of variance which was not explored in the first study was the extent to which the native and transfer students differed in their ability or readiness to undertake college work, as judged by test results, both after high school and at the upper division level.

Perhaps the single most significant finding from the first study was the great diversity in the performance of all types of students at the upper division level, both native and transfer. Differences were found among the different types of colleges, among colleges in the same states, between the sexes, among students from different junior colleges, and on almost every dimension which was examined. The fact of diversity in higher education has long been established with respect to the characteristics of the students who enter the many types of colleges which comprise higher education in this country. However, with an overall attrition rate of nearly 50 per cent by the junior year, and with a great deal of student mobility from college to college during the lower division, it was expected that at least some of the original diversity among institutions in the quality of their entering students would have been reduced by the junior year. Ideally, the influx of junior college students should not disturb what might be regarded as the intellectual equilibrium which the four-year colleges may have achieved by the time their own students reach the upper division. This will more surely be true if the junior colleges have done a satisfactory job of screening out the students who have little potential for baccalaureate degree work in any college, and of guiding those who do to the four-year institutions where their probability of success is maximized.

While the record of the junior colleges in performing the transfer function would probably not be judged as unsatisfactory on the basis of the evidence in the first study, there appeared to be sufficient justification in the findings for taking both a longer look at the students who transferred to four-year institutions in 1960, and for making a more intensive examination of the factors which were responsible for their performance in the various institutions. The present decade might be characterized as one of tremendous growth and change in higher education--change in patterns of college attendance, increases in the numbers of students of all ages who are attending college, an upgrading of standards of instruction and of expectations concerning student achievement, and in the level of coordination of higher education in the various states. These changes, among others, seemed to add to the justification for taking a new look in 1964 at the various policies, practices, and programs of the participating institutions and states which might have an effect on the mobility of junior college students in the future and on their performance after leaving the junior college.

In general, then, the major objectives which the second study were designed to achieve are:

1. To make a somewhat more final assessment of the success of the junior colleges in preparing their students to accomplish their baccalaureate degree objectives.

2. To find out what individual and institutional factors might account for the finding that students in some four-year colleges were so much more successful than students in other colleges.

3. To examine the present role and possible contributions of testing in the four-year colleges in admitting, counseling, evaluating, and placing transfer students from junior colleges.

4. To find out the extent to which differences in the academic ability of native and transfer students might account for differences which were found in their performance in the universities.

5. To document changes which had occurred since the inception of the first study in the conditions under which transfer students are admitted and evaluated in working for their baccalaureate degrees.

A limited amount of new data was collected during the second study for various subgroups of native and transfer students. Major attention was given to the students who had not graduated in 1962 but who were still enrolled in some college at the end of the second year after transfer. Their enrollment status was checked by the participating colleges at the beginning of the fourth year after transfer, to find out whether they had graduated, dropped out, or were still enrolled. Transcripts were obtained for the dropouts who transferred to other four-year colleges, which made it possible to evaluate their probable success in another situation. The second major type of data collected in the second study were the results of various testing programs in which both native and transfer students had participated. More test data were collected than analyzed, since problems of controlling differences in the many testing programs in which the students had participated were nearly insurmountable. The programs varied along such dimensions as time of testing, e.g., freshman and upper division, and type of test, e.g., aptitude and achievement. Another type of new data obtained in the second study included policy statements, statistics, status studies, informational materials, and, in some cases, opinions relating to the situations in the four-year colleges in which the transfer students would be completing their degree programs in the mid-1960's. An attempt was also made to obtain a late status report on coordination in each of the 10 states. However, in a number of states the 1965 sessions of the legislature were expected to bring additional changes in the structure of higher education.

Results

The major findings from the second study are summarized in five areas: (1) student outcomes three years after transfer, (2) sources of variance in performance, (3) pitfalls for transfer students, (4) usefulness of test results as explanatory factors, and (5) policies, practices, and programs in 1964.[1]

Student Outcomes Three Years after Transfer

While the percentages of graduates and dropouts found at the end of three full years after transfer cannot be regarded as final, for all time, they are expected to change only slightly with the passing of each additional year. By October 1963, three calendar years after the students had transferred from junior college, 62 per cent had obtained their baccalaureate degrees from the institutions they entered after leaving junior college. An additional nine per cent were still enrolled and probably would graduate during the fourth year after transfer, thus giving a probable graduation rate of about 71 per cent, at least among students in fairly regular attendance after transferring (once) to a four-year institution. Attrition was 29 per cent by the beginning of the fourth year after transfer, which was only one per cent greater than the percentage found more than a year earlier. Only 10 per cent of the study group bore the stamp of "dismissal for poor scholarship" at the end of the study. This was perhaps a less final outcome than the label implies since many of the dismissed students could have applied for reinstatement or for admission to another institution with some certainty of favorable action, either immediately or after an absence from college. Still, about half the group which withdrew of its own accord did so with unsatisfactory grades, many of which were so low that dismissal was imminent, if not inevitable.

Transfer to other colleges.--An indeterminate number of the dropouts transferred to other colleges, where they achieved a fairly satisfactory degree of success in comparison with the total 1960 transfer group. No firm figures could be obtained because the self-reports of the dropouts were the only source of information about their transfer to other institutions. An analysis of the transcripts of this somewhat limited group showed that more than three-fourths of the dropouts who entered four-year institutions either graduated or were still enrolled in the fall of 1963. All but five per cent of those who were still enrolled had averages of C or above at that time. Only five per cent had been dismissed for poor scholarship, although about one-third of the group had been dismissed from the four-year colleges they entered after junior college. The success of the small group of "dropouts" who entered professional schools was even greater, in that only two students withdrew (both with satisfactory grades) and many were reported by their deans to be doing excellent work.

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[1] The major findings from the first study were summarized briefly on pp. 1-8.

The record of the dropouts who returned to junior college or who enrolled in non-resident programs was somewhat less encouraging, when judged in terms of their re-admission to regular programs leading to the baccalaureate degree. However, since some of these students may have entered terminal programs (or adopted terminal objectives) after dropping out of degree programs, it may be unfair to classify them among the failures. It is estimated, perhaps conservatively, that the ultimate rate of graduation for the 1960 transfer group, when augmented by the dropouts who succeeded elsewhere (or who re-enrolled at a later date and obtained their degree), would reach a high of between 75 and 80 per cent. At the other extreme, the number of students whose grades were so poor after transfer that they could not have continued their education somewhere was very small.

Record during the third year.--The percentage of graduates increased from 40 for the first two years after transfer (or 45 for those students who transferred with junior standing) to 62 by the end of the third year. The gain for the men was considerably more than the gain for the women, since many of the men were enrolled in programs which most students required more than four years to complete. While the overall increase in attrition was very slight during the third year, the increase for women was five per cent, compared with less than one per cent for the men. A rather large number of women (and a few of the men) dropped out with only one or two degree requirements unfulfilled, sometimes to begin teaching with a temporary certificate and at other times to be with husbands who had their degrees in hand. Of the students who were enrolled for a third year after transfer, nearly two-thirds received their degree that year and only 17 per cent withdrew, most of them of their own accord. The findings suggest, then, that the longer a transfer student persists, the greater the probability of his eventual graduation.

Nearly half the students who graduated during 1962-3 required only one additional semester beyond their "normal" graduation date, i.e., two years after transfer, to complete their degree requirements. On the other hand, nine per cent did not complete all requirements until the summer session following the third year, including some who had also been enrolled in the two previous summer sessions. Many of the students who finished their degrees in only one additional semester had been enrolled in teacher education programs which required them to spend a major part of one term away from the campus in their student teaching assignment.

Sources of Variance in Performance

State and institutional differences in rates of graduation and attrition remained large in the further analysis of performance. The major state universities showed the greatest percentage gain in graduates during the third year, when amount of junior college credit awarded was controlled. The private universities, where attrition increased five per cent, showed the smallest gain in graduates. The range in graduation rates was large, even at the end of the third year after transfer. Among the 10 major state universities the percentage of graduates ranged from 43 to 72, with only eight per cent of the students still enrolled at the institution with the lowest percentage. All the teachers colleges and what have been termed the other state universities graduated at least half their 1960 transfer students by the beginning of 1963-4, and 12 (among the 22 studied) graduated more than 70 per cent. The range in the percentage of graduates over the total group of 43 campuses studied was from 29, for one of the technical institutions, to 91, for one of the teachers colleges, with a median of about 67 per cent. Thus, the particular four-year college in which the transfer student decided to pursue his degree program appeared to be a very major factor in his success in attaining the baccalaureate degree.

At the same time, junior college transfer students in some states had a much better chance of success than in others, when within-state differences were ignored. Michigan and Pennsylvania appear to have had the best records of retention and graduation of transfer students, and Illinois and New York the poorest. Florida and California ranked in the middle in the ordering of states. A few of the rather complex factors which appeared to be related to differences among states, with examples of their application, are:

1. Restriction of opportunity on the basis of high school and/or junior college achievement: students in the two-year colleges in Pennsylvania were required to meet the minimum freshman admission standards of the University and were screened accordingly when they entered junior college. Transfer to the University of Michigan was regarded as a privilege, not a right, which was granted to a rather select group of transfer students who had earned C+ averages in junior college.

2. Diversification of curricular offerings among various types of four-year colleges: engineering, business administration, and other specialized programs were offered by a number of the Michigan public universities, thus giving transfer students some choice among institutions with different characteristics. In Illinois, on the other hand, many specialized programs were offered only by the major state university.

3. Development of articulation and guidance programs: Georgia and Pennsylvania did extensive pre-college testing, the results of which were used in counseling students about their choices of college as freshmen. In Michigan, articulation of transfer problems was particularly effective in involving both student personnel and admissions organizations in cooperative endeavors to improve transfer opportunities.

Class level at the time of transfer.--The success of students who transferred after two years in junior college was remarkably greater than that of students who transferred after only one year (or less than two). Attainment of the associate degree did not in itself appear to make a difference. However, students who completed two years in junior college but who lost considerable credit when they transferred performed less well in the four-year colleges than those who were granted full junior standing. Attrition among the students who transferred with only sophomore standing was found to be 45 per cent (one-third of which was the result of academic dismissal), compared with only 26 per cent for those who transferred with junior standing. Furthermore, only 35 per cent of the sophomores graduated three years after transfer, although many had been granted more transfer credit than is normally earned in the first year of college. Among the students who had transferred as full juniors, 48 per cent graduated "on time" and 68 per cent graduated by the end of the third year after transfer. Attrition was 41 per cent in the group which lost considerable credit when they transferred and only 18 per cent graduated after two years, although they had spent two years in junior college before transfer. Fewer than half this group graduated by the end of the third year after transfer and only 11 per cent were still enrolled.

The grades earned both in junior college and after transfer by the students who transferred as full juniors were also somewhat higher than those of students who transferred with lesser standing. Differences between the grades of the sophomores and those who were classified as "sub-juniors" were small, the former group having earned slightly higher junior college grades and the latter, slightly higher grades after transfer. Furthermore, the grade-point differentials, i.e., the differences between the two-year and four-year averages, varied for the three groups. The average grades of the group which transferred as full juniors dropped less than those of the other groups, particularly at the major state universities. Vast differences among the colleges in grading standards tended to obscure the pattern of performance of the three groups, when data for different institutions were combined. However, analysis of variance tests produced generally significant results for the various types of colleges and for all institutions combined.

Reasons for the superiority of the group which transferred as juniors could not be inferred from the data. However, there are two very probable reasons, either or both of which may account for the difference between the sophomores and the juniors. The junior colleges may actually do a better job of preparing transfer students in two years than in one.

In addition, the less able students may be either screened or guided out of transfer programs by the junior colleges during the sophomore year, after they have been given a fair chance to demonstrate their potential for college work. The greater maturity of the students after two years in junior college is also a likely factor in their better performance, since the personal adjustment they must make at the four-year institutions is often a difficult one. Whatever the reasons, the evidence is quite clear that students who transfer as juniors have a much higher probability of success in the four-year colleges than those who transfer earlier, in terms of both grades and attainment of the degree.

Part-time students.--While the study was concerned primarily with full-time students in the four-year colleges, part-time students were studied at three institutions in order to gain some idea of their persistence and success in obtaining degrees. The analysis was limited to students who appeared to have serious degree intentions. An enrollment check at the beginning of the fourth year after they transferred showed that only 19 per cent had received their degrees, another 19 per cent were currently enrolled, and 62 per cent were not then enrolled. Only 56 per cent of the part-time students had been enrolled for both semesters during the first year after transfer, although an additional 12 per cent dropped out and then re-enrolled the following fall. Since only 11 per cent were dismissed for poor scholarship, it is possible that some of the students in the so-called attrition group will re-enroll from time to time according to some plan which will lead eventually to the granting of the degree.

It is clear that, in terms of persistence and completion of degree programs, the record of the part-time students in the four-year colleges was not as good as that of the full-time students. Their education may also have suffered as a result of their prolonged enrollment in what should have been two-year upper division programs. Many students combined full-time employment with part-time study and withdrew from the latter whenever the pressure of time or other matters became great.

Differences among majors.--Another look was taken in the second study at the variance associated with the students' majors, in order to find out whether it had decreased as students completed their third year after transfer. The percentages of students who were still enrolled in the different majors at the end of the two-year follow-up study varied considerably since students required more time in some majors than others to complete their degree requirements. However, the cumulative findings for the three-year study suggest that the transfer students had about the same probability of eventual success in the various majors. Attrition was found to be about the same in each of the broad major fields, although the grades and percentage of students who had received their degree at any given time differed by field. The finding of parity among majors did not apply equally to all participating institutions, or to all states, but it suggests that the junior colleges can offer lower division programs which prepare students satisfactorily for transfer in most major fields, if good articulation with the four-year colleges is sought.

It was also noted that the transfer students tended to avoid some specialized majors or, conversely, that high school graduates intending to earn degrees in some fields were enrolled almost exclusively in the four-year colleges. Some of these fields were music and other performing arts, nursing, natural resources, and engineering science (although not, of course, conventional engineering programs). On the whole, however, transfer students were more likely than natives to choose majors in applied fields in which they could be immediately employed, e.g., business administration, teaching, and engineering.

Pitfalls for Transfer Students

Two questions emerged in the analysis of the enrollment data for the third year after transfer, the answers to which appeared to have considerable significance for educational planning involving the two- and four-year colleges. They are: why did so many students who transferred with junior standing take three years to complete their baccalaureate degree programs? and in what ways or in what areas did the transfer students experience failure in the four-year colleges? The overall record of the 1960 transfer students was good, in terms of graduation and attrition rates, but it was expected that an analysis of delayed graduation and failure might yield insights which could lead to improvements in articulation. An extra year at a four-year college is costly to both the students and to the state, whether as a result of poor articulation between colleges, poor grades, changes in plans, or reduced course loads. An analysis of the records of students who did not graduate on time and who failed to do so at all, because of poor grades, was undertaken in an attempt to identify the significant factors in each type of problem.

Delayed graduation.--About one-third of the graduates who transferred with junior standing took more than two years to complete their programs in the four-year colleges, although all were full-time students when they transferred. An analysis of their transcripts showed that 19 per cent had grade-point averages which would not have permitted them to graduate, even if they had satisfied all other requirements. Most of the poor averages were only slightly below C since the students were generally required to have a C average in order to continue in college at the senior class level. Some students had a satisfactory average, overall, but failed to meet other grade-point requirements for graduation, for example, a C average or better in their major, in upper division courses, in professional courses, or in the last semester before graduation. Most of the students with poor grades also lacked the required amount of credit to graduate. About half had not attempted enough units while the remainder had failed and/or repeated some courses with a resulting credit deficiency.

Among the students whose grades were satisfactory, about 75 per cent had not earned the very minimum amount of credit required for graduation from particular institutions, irrespective of satisfying specific course requirements. A majority of the students had simply enrolled for too few units per semester to accumulate the 60 or so semester hours in the four-year colleges which they needed to graduate, although they had been enrolled technically as full-time students. Only 15 per cent lacked credit as a result of having withdrawn temporarily after transfer. An analysis of the records of students who appeared to have met both grade and credit requirements for graduation showed that 20 per cent had changed their majors after transfer and, in doing so, had incurred additional graduation requirements. Another 10 per cent were enrolled in rather specialized majors for which the junior college did not always offer adequate lower division preparation. The remainder were delayed by some fairly specific curriculum problem which implied a lack of articulation in the programs of the two- and four-year colleges. This group included more students in business administration and elementary education, than in other fields, who had difficulty scheduling their required courses because of problems of two-semester sequences, unmet course pre-requisites, and the rigid prescription of elective courses.

A more detailed analysis was undertaken for engineering students than for other majors, because of the large number still enrolled for a third year. An analysis of catalogs showed that only a few institutions described engineering as a five-year program. About 20 per cent of the "delayed" graduates in engineering were in such programs. Another 20 per cent attempted but failed to earn sufficient credit to graduate. Only eight per cent had grade-point averages which were below graduation standards. A majority of the students in engineering had just not attempted enough units during their first two years after transfer to meet credit and course requirements for graduation. They may have enrolled for light course loads on the advice of their counselors, in order to avoid failure in upper division courses in their major in which the native students were reported to offer very tough competition.

The findings suggest that, in most major fields, a large majority of the transfer students who did not graduate on time simply lacked the required amount of credit to do so but the reasons for this deficiency were not entirely clear. Some students were unable to schedule all required courses in two years and were not permitted to make substitutions. Three factors which may even intensify the problem in the near future are: (1) continuing curriculum change, particularly in the professional fields, (2) increased lower division prerequisites, with some first-level college courses being moved down to the high school level, and (3) increased requirements of all kinds for the degree, with a resulting decrease in flexibility in choice of electives.

Analysis of failures.--The objective of the analysis of failure in courses and subject areas was the identification of specific problems encountered by students with unsatisfactory grades, rather than underlying causes of failure such as poor motivation and inadequate preparation. Only a small percentage of the attrition group failed totally, i.e., in at least half the courses they attempted. Academic dismissal was distributed quite evenly across majors. It did not necessarily follow from these observations that failure was completely random, however. The records of poor students at institutions with relatively high attrition were examined in an attempt to obtain some specific clues concerning failure which the junior colleges might find useful in advising their transfer students or in modifying some of their own curricular offerings.

Most students in academic difficulty at institutions which administered an English proficiency examination at the junior level were unsuccessful in passing it, at least the first time they attempted to do so. While failure to pass it resulted in no dismissals and only occasionally in a delay in completing graduation requirements, it appeared to be symptomatic of other academic problems. Students who could not pass the examination were often placed in advanced remedial courses, which they sometimes failed also. Junior college students with only minimally acceptable records apparently were not ready for the proficiency examinations which some institutions required after transfer.

Students who neglected to complete their general education requirements before transfer were more prone to failure in the four-year colleges than their classmates who entered with the same amount of credit, but with their general education requirements out of the way. The rate of failure was higher in highly prescribed general education courses developed by some four-year colleges than in first-level courses which could be elected to satisfy general education requirements. The two areas in which the largest numbers of students experienced difficulty are the humanities and natural science. It was reasoned that the greater difficulty met in general education than in more advanced courses in the students' major fields was probably related to the general screening function served by the lower division program in many universities, and to the examination system used in such courses. Nearly all general education requirements could have been satisfied in junior college, before transfer. It appeared to be either negligence or poor counseling which kept students from doing so, and thus made them vulnerable to failure in their first year after transfer. Other lower division courses in which the transfer students tended to earn poor grades included various sequence courses which were begun in junior college but not completed there, particularly in foreign language and mathematics. Differences in methods of instruction and/or content may have been responsible for such failure among students who could not adapt easily to university instruction. The implication from the findings is that transfer students should remain in junior college until they complete their general education courses, proficiency requirements, and sequence courses, even at the risk of losing some unit credit when they transfer, if they are to avoid failure.

Usefulness of Test Results as Explanatory Factors

A considerable amount of testing of transfer students is now being done, usually under the guise of a testing program for all new undergraduate students. Little use appears to be made of test results for new students with advanced standing, although a number of possible uses are now under discussion, some of which would also be applicable to native students at the time they enter the upper division. Transfer students to a number of the colleges in the study participated in state-wide testing programs at the twelfth grade or college freshman level and were not re-tested when they transferred in 1960. A few of the proposed uses of test results for new students (and others) with advanced standing include the screening and/or counseling of applicants for admission with advanced standing, validation of credit earned at another institution, placement in sequence courses, and demonstration of proficiency in general education and other areas.

There is no clear answer to the question of whether increased testing would lead to an expansion of opportunity for transfer students from two-year colleges, in terms of both student mobility and flexibility in planning lower division programs, or to a restriction of opportunity by institutions which now have essentially an open-door admission policy for transfer students. Increased testing also poses the threat of curriculum control, which might result if junior colleges should attempt to tailor their lower division programs to the specifications of the examinations, rather than to their own objectives and functions.

Data which were analyzed in the present study were obtained in connection with ongoing testing programs in a number of states and four-year colleges. A selection of data was made for 10 institutions in six states which were able to provide fairly complete test results for intact groups of native and transfer students. Because of wide differences in the programs, no attempt was made to equate scores obtained under different testing conditions or to combine results for the various institutions. The two major dimensions in the programs were the time of testing, i.e., pre-college and transfer, and the type of test administered, i.e., academic aptitude and achievement in various areas. Separate analyses were made for men and women at each institution, because of observed differences in both their test performance and their success in the four-year colleges. The two major questions which the present analysis of test data was designed to answer are:

1. How useful are the different types of test scores in distinguishing among successes and failures in the various groups of transfer students who participated in the study?

2. Did the native students who graduated from the various four-year colleges have a higher mean level of academic aptitude and ability than the transfer students who graduated at the same time, from the same institutions?

Prediction of success among transfer students.--The general hypothesis which was tested is that there would be no significant differences in the mean test scores of the groups of transfer students who graduated, dropped out, and were still enrolled two years after transfer. However, it was expected that if differences were found, the graduates would have earned the highest mean scores and the dropouts the lowest. Analysis of variance tests were made for each institution, for the scores of men and women separately. Of the 96 analyses made, only 16 values of F were obtained which were significant at the .05 level or better. All but one of the 16 significant values were found in tests made for four institutions in two states. The differences in mean were all in the expected direction.

In one state where significant relationships were found, freshman applicants to the universities had been screened on the basis of their scores on a twelfth-grade battery. Transfer students, on the other hand, were admitted largely on the basis of their grades in junior college. While the total scores on the battery did not discriminate among successes and failures after transfer, it was found that scores on an academic aptitude test (which was included in the battery) did so for the samples of transfer men. In the other state where significance was found, test scores appeared to be a useful supplement to the junior college grades in predicting success after transfer, although they had not previously been used to screen either native or transfer students.

Although relatively few differences were statistically significant, there was a fairly common pattern of scores which emerged from the various analyses, in which the graduates earned the highest mean scores and the dropouts the lowest. The level of scores of the students who were still enrolled varied from college to college, as a function of the reasons for their delayed graduation. For example, engineering students who were still enrolled for a third year after transfer earned mean scores which were in some cases higher than those of the graduates in other fields. However, at other colleges the non-graduates were often rather poor students whose grades were simply below the standard for graduation and whose test scores were below those of the dropouts. It is quite clear from the findings that there was considerable overlap in the test scores of the graduates, the dropouts, and the students who were still enrolled, and that many transfer students graduated (or failed) in spite of their low (or high) test scores. The findings did not show that either time of testing or type of test used was related to the finding of significance in the relationship between test results and performance after transfer.

Analyses of the test scores earned by the transfer men produced a larger number of significant values of F than those of the women. This is consistent with the finding that the men earned generally poorer records in both high school and junior college, which did not deter them from transfer. Sex differences in the test scores of the transfer students were somewhat difficult to interpret, since there were no separate norms for men and women in most programs. In other words, it was difficult to infer whether differences in the scores of the transfer men and women were also present at the freshman level, or whether they arose as a function of screening during junior college and/or differential attrition at the time of transfer. As might be expected, the women tended to earn their highest scores on the various types of tests with considerable verbal content, while the men earned their best scores (which were also higher than those of the women) on tests requiring quantitative skills and/or aptitude. Overall comparisons of men and women were difficult to make because of the differential weighting of the various tests in the total scores for the batteries. Differences in the majors in which the men and women enrolled also tended to invalidate some of the comparisons of test scores, since upper division courses in the various majors often required quite different types and amounts of ability.

Native-transfer comparisons.--Numerical differences in the grade-point averages of the native and transfer students were small but since they were statistically significant for many of the major universities, some further comparison of the groups appeared to be desirable. It was self-evident that the transfer students often had to make a difficult academic and personal adjustment when they transferred to the large universities--competing with students who had survived a fairly rigorous lower division screening, attending large sections of courses with little student-instructor interaction, having to take a major share of the responsibility for their own education, and adjusting to other conditions which were new and sometimes detrimental to their academic welfare. A drop in grades during the first semester was scarcely unexpected at such a time but there was some suggestion of other contributing factors. Two of the most obvious ones were: (1) junior college grading standards (or a quality of preparation) which differed from those of the university, and (2) a difference in the academic ability of the native and transfer students.

The first factor was difficult to analyze because of differences among the junior colleges in the quality of their instruction and in their standards, the small numbers of transfer students who transferred from particular colleges, and the dispersion of the students among a number of four-year institutions with quite different standards and programs. Findings from the first study suggested that the grading standards of the junior colleges and the teachers colleges were fairly comparable in that the transfer students had little or no grade-point disadvantage in transferring to this type of college. They were most consistently at a disadvantage in transferring to the major state universities, which tended to screen out their poorest students in large numbers during the first two years. Differences in the quality of the lower division instruction would be difficult to demonstrate without extensive testing, which would include measures of pre-college achievement and academic aptitude. In any case, adjustment after transfer and differences in the standards of the two- and four-year colleges were both regarded as contributory causes in the analysis of differences in performance after transfer to the universities.

Differences were also anticipated in the academic ability of the students who entered two- and four-year colleges as freshmen and who persisted to the attainment of the baccalaureate degree, whether in four-year or in two-plus-two programs. Freshmen in both types of institutions, at least in the public sector of higher education, were very heterogeneous with respect to ability, as a result of non-selective admission policies which have operated until recently. However, competition for satisfactory grades tended to be much stronger in the universities than in the junior colleges, with the result that the academic ability of the native students in the upper division was expected to be somewhat higher than that of the transfer students. The null hypothesis concerning the ability of the two groups was tested, which involved the use of tests of academic aptitude, achievement in subject fields, and skills such as English usage and arithmetic. The time of testing differed for a number of the groups, i.e., at the time the student first entered college and when he transferred, which complicated the analysis somewhat.

Comparisons were made of the test scores of the graduates for whom various analyses of grades had been made earlier. Evidence from the analysis of test data for nine institutions suggests that there are significant differences in the ability of the two groups of graduates from the major universities, i.e., the null hypothesis was not supported, except at the teachers college. Differences were also found in the ability of the two groups which graduated from the technical institution. Time of testing was taken into account in interpreting the findings. Differences (or the absence of differences) in scores earned by groups which took the test at the same time had strong face validity, even though the motivation of the two groups to do their best on the tests might have differed. The finding of no significant difference in scores earned by groups which were tested at different times was also taken as evidence of actual differences between the two groups, on the assumption that on most tests there should have been a significant gain in score by the group which was tested after two years in junior college. The scores of the transfer students at the teachers college were found to be significantly higher than the scores earned by the native students. Since the former group was tested as juniors and the latter as freshmen, the interpretation was made that the two groups did not really differ in their academic ability, i.e., that the native students would have made comparable gains in score if they had been re-tested as juniors.

The evidence also suggests that the two groups of male graduates more often differed in academic ability than the groups of women. Men tended to go to a junior college, rather than to a university, as freshmen because of their poor high school records and uncertainty about their ability to do satisfactory college work. Women tended to make the choice for personal or financial reasons. Their grades in junior college and later often reflected this initial difference in motivation, when compared with those earned by the men. Thus, it is not surprising to find that the male groups which started college in different types of institutions differed significantly in their academic ability, while the women did so less frequently.

Aptitude, subject-matter, and skill tests all appeared to differentiate between the groups of native and transfer students with about the same degree of efficiency. However, the number of variables in the nine-college analysis was so large that the inferences which could be drawn were somewhat tenuous. It appeared that some of the skills tested were not essential in the upper division. For example, many of the groups of women earned low scores on the numerical tests but were successful in majors in liberal arts, teacher education, and other fields which apparently did not require quantitative ability or skill. Similarly, the various measures of English usage did not show any consistency in discriminating between the two groups of graduates.

The question of comparative gains in the various types of scores by the native and transfer students during the lower division could not be answered in the present study, since the native students were not tested as juniors and neither group was re-tested during college. Sex differences in the test performance of native and transfer students also proved to be somewhat difficult to evaluate because of the lack of separate norms for men and women. It was quite obvious that significant sex differences existed in the groups of graduates but no answer could be obtained to the question of whether these differences were also present at the high school and/or freshman levels, in the two- and four-year college populations. Various attempts to relate the scores of the graduates to freshman and other norm groups produced the finding that the mean scores of graduates of universities which were fairly selective at the freshman level did not differ from the freshman means or medians. However, universities which were not selective at the freshman level graduated students who were somewhat superior in ability to the typical entering freshman, undoubtedly as a result of the selection or screening which took place during college. However, differences in the percentile scores of the freshmen and graduates were of a magnitude of from 10 to 15 points, which was not large. The mean scores of the graduates of the teachers college fell at about the freshman median, although the college had an open-door admission policy. Apparently attrition at this institution took place at both extremes of ability, for the college served certain junior college functions. Generally, the transfer men compared somewhat less favorably with the freshmen than did the other groups of graduates. This finding was interpreted to be a reflection of the effectiveness of the junior college in preparing some men with less initial ability to do college work to transfer to a number of four-year institutions and to do satisfactory work in them.

Comparisons of university grades earned by native and transfer students with high ability seemed to indicate that the transfer students were not handicapped by their junior college attendance, at least in receiving high grades in competition with native students. The percentage of transfer students at each institution who were identified as having high ability was somewhat smaller than that of the native students but their performance after transfer was at a par with that of the native students. At most of the universities for which data were analyzed, few or none of the high ability students suffered a drop in grades after transfer which would make them clearly ineligible for graduate school admission. The grades of the students who had transferred after only one year in junior college were lower than those of the students who had completed two years before transfer but the former group had another year at the university in which to raise their cumulative averages.

The findings concerning differences in test scores thus suggest that differences in the performance of the native and transfer students in the universities are closely linked to differences in the academic ability of the two groups. Native students whose average test scores were significantly higher than those of the transfer students also tended to earn higher grades in the upper division, when the two groups were in direct competition for grades. If differences in their lower division grades were controlled, the magnitude of the difference at the upper division level would be even greater, for the lower division grades of the junior college students were in most cases higher than those of the native students in the universities. However, it appeared that extremely high junior college grades might compensate to some extent for their lower ability and their problem of adjustment after transfer, with the result that differences in upper division grades would be minimized.

Policy and Program Changes

The students who participated in the transfer study were admitted as freshmen to several hundred two- and four-year colleges in 1958 or earlier, under admission policies which were largely non-selective. Most of the public institutions were required by law to admit all high school graduates for whom space was available. Only a few attempted to counsel applicants with low potential against enrolling (or against choosing transfer programs, in the case of the junior colleges), apparently preferring to give all types of students a chance to compete for passing grades in the lower division. There were, of course, some notable exceptions to this open-door approach to freshman admission in both public and private institutions, even in 1958. However, there was little inclination on the part of the four-year institutions to be selective in admitting transfer students in 1960, when the junior college study group entered the four-year colleges. An average of C or better in junior college, on almost any amount and type of work, was accepted as sufficient evidence of the applicant's aptitude for upper division work by most four-year colleges, in most majors.

Pressures of mounting enrollments, limited facilities, increased costs, and heightened competition among students for admission to the preferred institutions (and among institutions for scarce dollars to educate and house these students) had produced certain changes in the climate for admission by 1964, when the transfer study ended. The changes were felt first of all at the freshman level, as new junior colleges were created and existing ones strengthened in order to carry an increasing share of the workload of educating lower division students. At the same time, changes could be observed in inter-institutional coordination and articulation at the state level. These were made in an attempt to bring about a greater certainty that adequate provision would be made for the education of an ever increasing number of high school graduates who want to attend college, and that tax dollars for higher education would be spent wisely. Master plans for higher education had become a reality in the 1960's in many of the participating states, which had greater coordination and strengthened junior college systems as common goals.

The transfer student was in a sense neglected during this era, in the press of trying to accommodate all the projected college freshmen who were already in high school. The neglect was normal, in the sense that there was ordinarily a two-year lag between admission as a freshman and transfer, at least between two- and four-year institutions. Too, it was impossible to calculate the full effect of either the creation of vast new educational opportunity in the junior colleges, or the diversion to the junior colleges of freshmen who in previous years would have entered the universities as freshmen. Nor was there any serious consideration given to the question of what academic fate would await transfer students in the mid- and late 1960's, when they would be competing with an ever more select group of native students who were given a somewhat privileged admission as freshmen by the four-year institutions. Still another problem which received only passing consideration was the setting of quotas of new freshmen and transfer students by public universities which had limitations on their facilities, or the granting of priority to transfer students who had been "diverted" to junior colleges as freshmen by one or another means.

An attempt was made in the second study to document some of the policy changes in admission, retention, and graduation which had occurred between 1958 and 1964, and to make some current assessment of trends and developments in coordination, both formal and informal. The most conclusive finding was that change was most assuredly taking place when the study ended.

The full effects of recent policy changes, state master plans, and the creation of new machinery for the coordination of higher education could not be estimated, let alone assessed within the scope of the study. The findings on policy and program changes should perhaps be viewed as hints or suggestions of things to come, rather than dogma. Experience has shown that such policies, until fully implemented, are useful only as expressions of intent, which may be interpreted variously.

Changes in admission policies.--There was a fairly general concensus among the participating four-year institutions that the quality of their freshmen was steadily improving, and that there was some noticeable improvement in the junior college transfer students as well. Changes in the quality of the freshmen have resulted from the introduction of screening devices, where open-door policies were formerly in effect; the tightening of admission standards, in terms of both grade-point requirements and high school preparation; both better and accelerated instruction in high school; improved admissions counseling of freshman applicants; increased opportunity in two-year colleges; and more qualified applicants from which to select a freshman class, when facilities are limited.

Improvements in the quality of the transfer students were attributed less often to policy changes than to factors relating to program, except for stricter adherence to existing admission policies. Many four-year institutions reported that the junior colleges were making great strides in improving the quality of their instruction, and that relations with the junior colleges were being strengthened and more favorable attitudes developed as a result of increased articulation activity involving faculty and staff from both types of institutions. Some four-year colleges have begun to consider the question of what type of transfer admission standards are appropriate for applicants who would not have been eligible for freshman admission under newly increased standards. A few have adopted regulations governing such admissions, but only California has gained experience in this area as a result of long-standing selective admission policies for freshmen.

Other policy changes.--Inquiry was made concerning changes in three additional policy areas of particular concern to transfer students, namely, the evaluation of transfer credit, retention standards, and graduation requirements. Few changes were reported which might be regarded as significant or affecting large numbers of transfers from junior colleges. There was a barely perceptible trend toward the liberalization of policies governing the acceptance of transfer credit, except for the new reluctance of some institutions to award transfer credit for courses in which D grades have been earned. Little actual change in retention policies was reported, although a stricter adherence to existing policies was noted by some, e.g., less leniency in permitting students with unsatisfactory grades to persist indefinitely. In this area, a trend was noted in the staggering of admissions throughout the year, including summer sessions, by giving fully qualified students admission to the fall term and requiring others to delay until spring or summer terms when enrollments have traditionally been smaller than in the fall.

Although curricular change was rampant in the early 1960's, at all levels, few changes in graduation requirements were reported. Those which were noted usually reflected the adoption of more restrictive requirements, e.g., a longer period of residence after transfer and a more highly prescribed general education program. The latter type of change was offset to a certain extent by the negotiation of various articulation agreements which protected junior college transfer students against undue hardship due to program changes, and which also gave the junior colleges a certain freedom to develop curricula according to their own best judgments.

Changes in articulation and coordination.--The most significant changes in the early 1960's were judged to be the increases in articulation and coordination, both formal and informal, voluntary and legally authorized. Since the major focus of the present study was on transfer student performance, rather than institutional functions, more attention was given to articulation than to formal coordination. While the distinction between the two types of activity is not yet entirely clear, experience seems to point to the greater concern of coordination with budgets, buildings, and long-range planning, and of articulation with the student, the curriculum, and instruction. The point at which the two overlap and perhaps merge cannot now be projected. However, a certain distinction may be made to the effect that coordination will represent the interests of society and the state, while articulation will continue to represent the needs and interests of the student.

Changes in articulation took the form of vastly increased emphasis on inter-college, as opposed to high school-college relations, and the addition of staff members with assigned responsibilities for junior college relations. Four-year colleges which have recently assumed added functions and which are attracting more transfer students, as a result, became interested in articulation for the first time. There appeared also to be a marked increase in faculty involvement in articulation activities, by visitation between two- and four-year college campuses and common participation on subject-matter committees (or in conferences) in particular areas of instruction. Some indicators of improved communication between the two- and four-year colleges were also found--newsletters, special informational brochures, recruitment materials, and course equivalency lists. Some staff time was assigned to the admissions counseling of transfer students, which was expected to result in both better program planning and more realistic decisions about transfer.

Significant changes in the patterns of coordination of higher education, including the preparation of master plans, have recently been (or are now) taking place in California, Illinois, Michigan, New York, and Texas, in particular. In each instance, recommendations have been made and often already enacted that formally constituted coordinating agencies be established at the state level to insure the orderly development of opportunity in higher education for an increasing number and proportion of high school graduates. The recommendations have also included provisions for a considerable strengthening of the junior colleges, with the intent that they carry a greatly increased share of the responsibility for lower division instruction, as full partners in higher education. The implication is clear that articulation must be made to work, if the students are to take maximum advantage of their increased opportunity in the junior college and after transfer.

Conclusions and Implications

Conclusions from the first study were deferred until the completion of the second, in order to make a more final and complete assessment of the findings concerning transfer student performance. The conclusions deal with the nature of the students who begin their baccalaureate degree programs in two-year colleges; with conditions, policies, services, programs, and other aspects of the two- and four-year colleges; and with cooperation and coordination among the various colleges. However, one cannot make judgments concerning the performance of the students independent of the context of the colleges in which they are enrolled and of the state systems (however loosely conceived) of which they are a part. The conclusions are in effect assessments or judgments based on the totality of the findings from both studies. They undoubtedly reflect certain values, primarily the point of view that society benefits from having its citizenry educated to its highest potential and that the junior college could be a powerful force in developing a much better educated citizenry. Somewhat different conclusions might be drawn from the findings by others with different points of view.

The implications are primarily for action, rather than further research. Many of the latter needs will be obvious from the discussion of findings; others will evolve as the changes and trends in higher education which have been enumerated become realities. However, throughout the discussion runs the thread of the continuing need for the two- and four-year colleges to know themselves and each other much more intimately than has ever been true before.

Conclusion: Junior colleges are making it possible for increasing numbers of high school graduates to begin work for baccalaureate degrees who would not otherwise be able to do so for reasons of academic or economic deficiency, or for lack of family encouragement. The large number of successful teachers, engineers, businessmen, government workers, and other useful citizens who began their degree work in a two-year college is impressive.

> Implications: The goal of equality of opportunity in higher education can be approached by expanding and strengthening the public community colleges and by providing them with adequate financial support while keeping tuition and other charges as low as possible. These open-door colleges should continue to be the melting pot of higher education, where every type of student has an opportunity to strive for the highest educational goal he believes he is capable of achieving. In the interests of both society and the individual, a higher proportion of college-age youth--perhaps most--should be enrolling in the two-year community colleges in the years immediately ahead.

Conclusion: The general public (including the parents of high school students) still tends to under-value the contribution of the junior college to higher education and to view it as a kind of refuge for the "cannots," academically, and the "have nots," financially. The public votes for the establishment of new junior colleges and pays taxes to support them, but fails to recognize them as an appropriate institution for a majority of the high school graduates who seek two or more years of college education. Counselors, teachers, and parents are all prone to use the junior college as a kind of threat when college-bound students are not achieving as well as they should in high school. On the other hand, the very large percentage of state university graduates who began their work in a two-year college is not sufficiently publicized, nor is the record made by such students in competition with native students who spend all four years in one institution. As a result of all this, the junior college has been somewhat slow in coming into its own as a positive force in higher education.

> **Implications**: Many states are now at some stage of creating master plans for higher education or of implementing plans which have recently been approved. Care needs to be taken to identify the real role of the junior college in higher education in the plan for each state. The four-year institutions must bear their share of the responsibility for helping the public understand the junior college role. All too often the junior college is pictured in master plans as the panacea for all ills and problems in higher education--increasing costs, mounting enrollment pressures, shortages of qualified faculty members for the four-year colleges. Locally, supporters promise much in trying to gain approval to establish new junior colleges but fail to carry on the public information function until such time as additional support is needed. Ways should be found to help the public understand both the potential of the junior college in higher education and the problems its creation sometimes brings. Hopefully the rapidly growing numbers of junior college graduates will become convincing interpreters of the role and functions of the junior college.

Conclusion: In attempting to expand opportunity at the lower division level and to strengthen education at the graduate level, master planners tend to assume that adequate educational opportunity between these two levels will be offered without any attention on their part to coordinated planning. The advantage gained by expanding opportunity in the junior college may well be negated by their failure to provide new types of opportunity and additional spaces in existing programs to accommodate the growing numbers of transfer students. It may be desirable to develop entirely new types of programs, in some cases by building on junior college occupational curricula as technology expands, and in others by designing different levels of programs in such fields as engineering and business administration. As a two-year college program is rapidly becoming a requirement for many types of employment today, it is possible that within a matter of years a baccalaureate degree--perhaps in a two-plus-two program--will be a requirement in many new fields.

> **Implications**: Master planners cannot really afford to neglect curriculum in the four-year colleges as they are now tending to do, if the increased numbers of students who are going to junior college are to be served. Many state colleges which offered only teacher education until recently are now evolving into multi-purpose institutions, often at the university level. Conscious of their new status, they are prone to neglect their responsibilities to the junior colleges and, instead, try to copy the major state universities in curriculum development and standards, or to develop highly unique programs which cannot be easily articulated with those of the junior colleges. The obligation of the four-year colleges to plan for the orderly accommodation of increasing numbers of transfer students should probably be made more explicit in state master plans which call for strengthened junior colleges. Coordinating agencies might undertake the development of undergraduate curriculum master plans at an early date, to insure that new opportunities will be available as needed.

Conclusion: The door should be kept open to allow capable junior college students who are attracted into terminal occupational programs to transfer, if circumstances are favorable to their doing so. One easy but undesirable solution to crowding in the four-year colleges is to exclude arbitrarily the junior college students who have enrolled in occupational programs which are designed to be terminal. Techniques for classifying students as "terminal" and "transfer" and for counseling them into appropriate programs are no better than existing techniques for matching student and college at the freshman level. Closing the door to the four-year colleges to good students in all non-transfer programs would result both in discouraging many capable students from enrolling in such programs and in denying opportunity to others who should go on to work for baccalaureate degrees.

> Implications: It might be preferable to cease referring to programs as "terminal" and "transfer," and, instead, to recognize the student's right to be either terminal or transfer in either type of program, depending upon his achievement, abilities, and changing interests. There will be increasing pressures to become selective in admitting students into junior college transfer programs, as the four-year colleges become more selective at the freshman level. Consideration should be given to the question of whether the transfer "umbrella" for all non-vocational students is really an appropriate one.

Conclusion: All or most junior college students could be successful in achieving their degree goals after transfer if they would select four-year institutions and major fields which are appropriate to their ability and prior achievement. In every state there is probably at least one four-year college in which each transfer student with a C average in junior college could succeed, if properly financed and motivated. However, a large number of students are transferring to an inappropriate institution, i.e., to a college in which they have a very low probability of success in earning satisfactory grades and thus in achieving their baccalaureate degree objectives.

> Implications: The proper matching of transfer student and institution at the upper division level is just as important a goal as the matching of high school graduate and institution at the freshman level. The former is probably even more important than the latter, since fewer mistakes in choice can be remedied during the junior and senior years in college, particularly when students fail. More information should be obtained on a continuing basis concerning the relative success of transfer students in different types of four-year colleges and programs. More effective ways of using such information need to be conceived in counseling and admissions programs. All too little is known about decision-making concerning college attendance and transfer by the students and their parents, with or without the help of counselors. Planners need to know why mistakes are made in choosing transfer institutions and how they might be avoided. On a more philosophic plane, there is a need to evaluate the extent to which both society and the students themselves can afford such mistakes, within the context of preserving maximum freedom of opportunity for higher education.

Conclusion: A number of the major state universities are now admitting transfer students somewhat indiscriminately on the basis of barely satisfactory junior college grades, on the grounds that all such students must be given an opportunity to attempt programs of their own choosing. These same institutions are failing to evaluate the effects of their adoption of selective admission standards at the freshman level without an increase in standards for admission with advanced standing. The net result is an intensification of an existing problem by increasing the quality of the native students with whom the transfer students will have to compete for grades in the upper division.

> Implications: There appears to be need for either higher (or selective) admission standards for transfer students or more effective admissions counseling, or both, if society is to be able to capitalize fully on the development of new opportunity in higher education through the junior college. It may be shortsighted to expand junior colleges which are committed to an open-door policy, and then fail to take whatever steps are necessary to insure that transfer students from these colleges are admitted to institutions in which they can fulfill their degree goals. Thought needs to be given by both the master planners and the universities to the question of the right of the junior college graduate to transfer to any public four-year college. If opportunity to transfer to the major state universities is limited to those with a reasonable probability of success, the next question to be faced is the extent to which specialized majors should be developed in other types of institutions to which transfer students will be diverted.

Conclusion: The effects of diversity in higher education--in the quality of the entering students, level of instruction, types of programs, climate for learning, and pursuits of the faculty--all are reflected in the findings concerning the differential performance of the transfer students. No single meaningful conclusion can really be drawn about the quality of transfer student performance because of the vast differences which were found among the 41 four-year institutions which participated in the study, among the five types of such institutions, and among the 10 states. Transfer students with very similar grades from the same junior college, often in the same major field, will have quite different degrees of success in different four-year institutions, in terms of both their persistence to graduation and their upper division grades. Diversity among institutions will probably increase as a function of greater state-wide coordination and as institutions are encouraged to develop along particular lines to serve a specific clientele.

> Implications: There is need to study the characteristics of the students who persist and graduate from different types of institutions, as well as the students who are admitted as freshmen. Colleges should analyze the composition, characteristics, and achievement of their graduating classes, to find out what kinds of students are successful in their programs. It is false to assume that a junior college student with a C average will do equally well in all four-year institutions, in all programs, or that he will be able in all instances to compete successfully with native students who may have greater ability. Diversity of opportunity needs to be developed at the junior and senior levels, to accommodate the heterogeneity of talent and interest which is present in the very large groups of junior college students who plan to transfer to four-year institutions.

Conclusion: The C grade and the C grade-point average earned in junior college are relatively meaningless as global indicators of a student's likelihood of success in four-year institutions. Grades of A and B are given in junior college as recognition of superior achievement but a C grade may be given as a reward for compliance with course requirements at only a minimally acceptable level. In fact, the grade of C may be given with the thought that it will be discounted if the student applies for transfer. Naturally, a C grade may mean many things, when given by different instructors to different students, for different reasons. This is undoubtedly as it must be, but it would be a mistake to interpret C grades out of context.

> Implications: A thoughtful assessment of the rational basis for assigning junior college grades is needed now, at a time when standards in the four-year colleges are rising and when the group to be served by the junior college is expanding rapidly. As the junior colleges attempt to accommodate an ever increasing percentage of high school graduates and to provide programs appropriate to their needs and abilities, the problem of the C grade becomes even more acute. The programs offered tend to be either vocational or transfer. Some students in each will be terminal while some in each will enter four-year institutions. The student with only moderate ability who has no interest in a vocational program will probably declare his intention to transfer in order to gain admission to a program which leads to a baccalaureate degree. The question then is posed: to whom should the junior college C grade be awarded for doing merely satisfactory work--the student who aspires to transfer to a major university? the terminal, non-vocational student of moderate ability? or some faceless student between the two extremes?
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> The temptation has always been strong to tie junior college grades to those given by the major universities and to use the grade-point differential as a basis for evaluating the success of transfer students. The junior colleges take pride in a zero differential with the universities and movement in this direction from year to year is regarded by them as improvement. As the junior colleges begin to serve a much broader segment of high school graduates, and as the universities become more selective, this standard will be less appropriate than ever. Clearly the whole matter of grading in the two types of institutions is an appropriate area for articulation at the state level.

Conclusion: Junior colleges are doing a more effective job in educating their good students, i.e., those who have aptitude for college work and good high school grades, than in preparing students with serious high school deficiencies for transfer to four-year institutions. Students with poor high school records have less than an even chance of success after transfer to most four-year colleges if they attend junior college with no intervening experience and earn only C grades while making up high school deficiencies, probably while working at least part-time.

> Implications: A closer look needs to be taken at what have been termed the "late bloomers" in junior college, to find out why some are successful after transfer and why so many others fail. Weak students with both subject-matter and scholarship deficiencies should probably remain in junior college for more than two years before transfer, in order to catch up with their classmates who started junior college without such deficiencies. The real test of the weaker students' ability to do satisfactory work at the baccalaureate degree level may come in the last courses to be taken in junior college, which are too often postponed until after transfer by students who enter junior college with deficiencies. For such students, a three-plus-two program would probably bring greater success than a two-plus-three program, from which many students are now being dropped one year after transfer because of poor grades.

Conclusion: There is so much overlap in the distributions of academic aptitude of the transfer students who graduate and those who drop out that test scores do not distinguish very efficiently among the successes and failures. If junior college grades are used appropriately by particular institutions in screening, counseling, and/or selecting transfer students, there should be little need to introduce test results as further evidence of capacity to do satisfactory work in the upper division. This does not, of course, argue against the use of test results obtained for transfer students for other purposes, nor does it deny a significant relationship between test scores and grade-point averages. Some possible uses of test results at the time of transfer include placement in course sequences, demonstration of proficiency, qualification for honors programs, and validation of credit for courses for which transfer credit is not normally awarded.

> Implications: Test results should probably not be used to deny admission to transfer students if their junior college grades are good and if their occupational goals are reasonable ones. A large number of high school graduates with considerably less ability than the average university freshman are succeeding in junior college and going on to four-year institutions where they earn baccalaureate degrees in many different fields. On the other hand, some students with more than average ability do poor work in high school, earn only barely satisfactory grades in junior college, and are poor candidates for upper division standing, at least in the major universities. It appears that many four-year institutions are able to accommodate transfer students with a very wide range of ability who persist through the lower division in junior college and who are motivated to transfer.

Conclusion: The average ability level of graduates who were freshmen in the major universities is higher than that of their counterparts who began their baccalaureate degree programs in two-year colleges, although there is considerable overlap in the ability of the students in the two types of institutions. Differences in their university grades reflect this difference in average ability, which is compounded by the often difficult academic and personal adjustment which the transfer students must make when they enter the university as juniors. When groups of comparable ability compete for grades in the upper division, as in the teachers colleges, the chances are good that the transfer students will earn grades which are as high as those of the native students. Few junior college students with high ability and good junior college grades are handicapped after transfer in competing with native students for grades which would qualify them for admission to graduate school.

> Implications: When transfer students to particular institutions have less academic ability than native students, they should not be expected to earn grades on a par with those of the natives. The more important question to be answered is whether transfer students with lesser ability earn grades which enable them to persist and to meet graduation requirements. If the yardstick used to measure transfer student success is the grade-point average earned by native students, without controlling for differences in academic aptitude, one may expect to find that junior college students will be required to meet ever increasing admission standards for transfer. Coordinating agencies should strive to maintain a good academic "mix" in the junior colleges, i.e., to avoid siphoning off all the best students for the four-year institutions. If

the junior colleges are left to educate only the rejects from the four-year colleges, equality of opportunity will be lessened by the decline in quality of instruction which would ensue.

Conclusion: Grade-point differentials are one of the realities of university life which transfer students to these institutions should be prepared to accept, at least during their first year after transfer. However, junior college students are transferring to many different types of four-year colleges, with different grading standards and with varying differentials. Most students will suffer some drop in grades in their first semester after transfer but the size of the drop and the degree of improvement thereafter varies with the institution. A particular junior college will probably have a near zero differential with some institutions and a fairly sizeable negative differential with others, all within the same state. Significant positive differentials will be fairly rare and might be viewed with some concern as possible indicators of overly tough junior college grading standards.

Implications: Each junior college should examine annually its grade-point differentials with each four-year college to which a sizeable number of its students transfer, before attempting to evaluate and perhaps to tamper with its grading standards. Because of the status factor, the temptation is strong to try to reduce the differential with the major state university to near-zero, while ignoring differentials with other types of four-year colleges. However, any arbitrary attempt to close the gap with the major universities could result in the denial of opportunity to many transfer students who are now succeeding in various types of colleges. A more realistic goal is the achievement of a differential which most transfer students can "afford," i.e., a drop in grades which will not result in an average below C. Transfer students whose junior college average is only 2.3 can ill afford a differential of -.5; however, a group whose average is 2.8 could experience a drop in grades of this magnitude without fear of probation and dismissal.

If good junior college students are not alerted to the possibility that their grades will drop after transfer, they may become discouraged and even withdraw, though in good standing. There is clearly no simple approach to evaluating grade-point differentials or to bringing about desired changes in them, but it would be wise to view these differentials as very rough indicators of the appropriateness of both grading and admissions standards in the two- and four-year colleges.

Conclusion: New junior colleges are offering educational opportunity to countless thousands of high school graduates of average ability who have inadequate financial resources to attend a four-year college outside their home communities (or to pay tuition at local four-year institutions to which they might be admitted). Many are attracted to transfer programs in the junior colleges with the expectation of becoming engineers, teachers, and other types of professional workers, only to be stranded two years later with no more financial backing than they had when they graduated from high school. Others take jobs while enrolled in junior college in order to earn money for expenses after transfer and neglect their studies in doing so, although they are able to earn C grades which qualify them for transfer. Under present financial arrangements and programs, many junior college students are developing false expectations about transfer and are having to drop out after finding that they cannot solve their financial problems.

Implications: A critical examination should be made both of the current philosophy of financial aid and of the nature of existing programs, in light of the needs of the students who begin their degree programs in junior colleges. Most of these students would not be regarded as contenders for scholarships. On the other hand, they are being encouraged to embark upon two-plus-two programs with at least a tacit assumption that some form of aid will be available to them to transfer, if they do satisfactory work. Some of the questions which need to be examined are: Should junior college students with only C averages be advanced money for their expenses in the upper division, to be repaid after graduation (assuming that students with A's and B's are already being taken care of)? Should would-be scholarship winners at the freshman level be encouraged to attend junior college with the promise of aid as juniors? Is the present trend toward greatly increased aid to capable high school graduates to enable them to enter four-year colleges as freshmen a wise one, or should substantial sums be reserved for deserving transfer students at the junior level?

Conclusion: Counseling about college attendance and career choice needs to be greatly improved at all levels--high school, junior college, and in the four-year institutions. Counselors must become aware of the interdependence of the various levels and segments of education and of the need for long-range planning by the students. They must be alert to the varying patterns of college attendance which many students now pursue--two-plus-two programs, employment between high school and college or during college, off-campus part-time study leading into regular degree programs, and work-study curricula. Both counselors and teachers tend to be familiar with the colleges in which they received their own training but to be woefully uninformed about the many other institutions which their students may attend, particularly the new community colleges. The kinds of information which counselors, students, and their parents need to have in order to make intelligent choices and decisions about college are not yet clear but it is certain that the information presently available is vastly inadequate.

> Implications: Improvements in counseling will come about only as a result of related actions on several fronts. First, college administrators and board members need to be convinced on the contribution which counseling could make to the total educational experience of the students, given adequate financial support and appropriately trained staff. Unless budget- and policy-makers recognize the need for increased support for counseling, the other changes will be relatively ineffective. The second strong need is for the upgrading of both pre-service and in-service training programs for counselors, particularly for the junior colleges. The goals and objectives of junior college counseling need to be defined more clearly as one basis for developing more appropriate counselor training programs. The needs of transfer students in particular for counseling services might now be examined in light of the new information from this study about their characteristics and problems. The implication is not that the counseling now being done is poor, but that there is not enough of it and that too few students are now benefitting from present counseling services.

Conclusion: In many four-year institutions transfer students are being overlooked in planning orientation programs, in offering counseling services to new students, in inviting their participation in social and extra-curricular activities, and, above all, in obtaining appropriate advisement at the time of their first registration. There was little or no evidence of discriminatory policies or practices affecting the junior college transfer students but there was a general lack of concern for their needs and interests, compared with the attention given the entering freshmen. The new freshman continues to be the preferred client of the four-year institutions, particularly in their student services programs, while the transfer student is usually left to make his own adjustment to the new situation.

> Implications: Before they can take appropriate action with respect to programs, the four-year colleges may need to look first at the characteristics of their new undergraduate transfer groups--how many, how old, at what class levels, from what types of colleges (and for what reasons did they transfer), their sex, where they are housed, and their interests. Too often the transfer students are grouped ignominiously with the new freshmen in orientation programs, where they feel awkward and unwelcome. Their need for orientation may be different from that of the freshmen, because of their college experience and greater maturity, but it is probably no less. Similarly, their need for both counseling and academic advising is often acute during their first year after transfer, since many are still unsure of themselves or uncertain that their decisions and choices have been the proper ones. Special advisors in the four-year institutions may be needed who have a philosophical commitment to the junior college and who would make it their business to become well acquainted with the junior colleges which are the major sources of upper division transfer students.

Conclusion: The good performance of the students after transfer is consistent with their appraisal of the quality of instruction they receive in the junior college. Well qualified instructors who are deeply interested in students and in teaching are making it possible for the junior college to bridge the gap between the high school and the university. The very bright students who make this appraisal are undoubtedly correct in suggesting some change, however. The somewhat slower pace which characterizes instruction in the junior college could be accelerated during the second year, with substantial benefits accruing to the students who intend to transfer to major universities in particular. Methods of instruction, techniques for evaluation, assignments of reading and term papers--all these could be made to approximate university instruction somewhat more closely as the time approaches for the students to transfer.

> Implications: Although one of the great fears of those who would strengthen junior colleges is that they will evolve into imitations of the major state universities, it seems desirable that cautious but deliberate attempts be made to "beef up" the instruction of the university-bound transfer students during their second year in junior college. This could be done without disturbing the essential character of junior college instruction as a bridge between high school and university. Since the numbers of students who transfer to the universities are usually quite large, it should be possible to arrange for some special work for them during their second year including, perhaps, special sections of some classes, added library and written assignments, varied types of testing, seminars, and other devices. Good students are now satisfied with their junior college education, as much and perhaps more so than students who do only average work in junior college. In order to keep the former group in junior college and to educate them appropriately, ways of offering them accelerated instruction during their second year should be identified and implemented.

Conclusion: There is no reason why junior college transfer students should require more time and units than native students to complete their degree programs, if the two- and four-year colleges work together on problems of articulation of their courses and curricula. Junior college students may be older than their native counterparts when they finish their degrees, for one or several reasons--high school deficiencies to be made up before starting college-level courses, exploration in junior college before choosing a major or transfer program, part-time enrollment or withdrawal while earning money to continue their education, and late decisions to attend college, among others. However, recent high school graduates who enter college without deficiencies and enroll on a full-time basis, who choose their major and transfer institution not later than the end of their freshman year, should be able to progress through their two-plus-two programs at the same rate of speed as their classmates in four-year institutions.

> Implications: The junior college is and should remain essentially a two-year institution, offering approximately half the baccalaureate degree program. However, despite restrictions on the amount of credit which can be transferred to four-year colleges, most students should be urged to remain in junior college until they can transfer with full upper division standing, with all lower division requirements met and with various pre-requisites satisfied. While the situation was good when the 1960 group moved through their degree programs, it probably could be improved if the junior colleges would study the detailed performance records of their transfer students. An analysis of the records would in many instances reveal specific transfer problems which could be remedied quite easily, thus enabling an even larger number of transfer students to graduate on time and also avoiding the loss of some students who drop out lacking only some minor requirement which often could have been met in junior college.

Conclusion: Attrition after transfer, for all causes, is higher than it ought to be and could probably be reduced through joint efforts on the part of the two- and four-year colleges. Factors related to attrition are multiple and complex, but the reasons given by the transfer students for dropping out as juniors and seniors have somewhat more face validity than those given by most freshmen and sophomores who feel they must save face when withdrawing. Factors of unsatisfactory grades, financial instability, and insufficient motivation or interest frequently combine to produce withdrawal among the transfer students. Thus, the same factors which directed them to junior colleges as freshmen, rather than to four-year institutions, later bring about their withdrawal as juniors and seniors.

> Implications: As noted previously, a sizeable reduction in attrition could be produced by means of a better matching of transfer students and four-year colleges, with the objective of getting each student into an institution where he has a better-than-even chance of success. However, unless a different approach is made to the administration of financial aid to transfer students, many who are now attempting to complete

baccalaureate degree programs without adequate financial resources would be well advised to make other plans. Transfer to most four-year colleges involves a cash outlay of a totally different magnitude than junior college expenses. Many students are transferring with little or no family backing, very limited savings on which to draw, and no workable solution for financing their education beyond the first semester or year in the four-year college. The drop in grades which many experience after transfer makes them even less likely to be able to obtain the needed funds to continue, through either part-time employment or assistance from the university.

Finally, one of the major reasons the students attend junior college as freshmen is their lack of motivation or uncertainty about their interests in or capability for baccalaureate degree programs. After transfer, many drop out for these same reasons. They complain about a lack of assistance from counselors and other staff members in working through their motivational problems, including frequent disappointment in their chosen major or profession, conflicting values, personal problems, and others. One possible implication is that the junior college should permit and perhaps encourage their former students to return to talk through their problems with former counselors and instructors. In any event, the two-year investment which has been made in these transfer students could produce a much higher pay-off for them and for society, if somewhat greater assistance in various forms were provided when they leave the junior college.

Conclusion: Present articulation machinery in many states and in many institutions is quite inadequate to solve the problems which will be brought on by an increasing volume of transfer students. Problems of numbers will be complicated by an increased diversity in the programs offered by the various four-year colleges and by changing patterns of transfer to different types of institutions. Uniformity of program is impossible to achieve in either the junior colleges or the four-year institutions and is probably undesirable even if it could be attained. Differences do and will continue to exist in the structure and content of general education programs, in course placements and pre-requisites, and in methods of instruction and materials. Junior colleges should not be expected to offer an infinite number of transfer programs to parallel those of all four-year institutions to which their students might transfer. Neither can the junior colleges assume that all their students will transfer to the major state university after which they have tended to model their programs. A multi-college approach at the state level is needed in order to achieve good articulation of the two- and four-year programs in order to preserve the individual college's right to experiment and innovate, and to protect the student's transfer credit.

Implications: Two- and four-year colleges are rapidly becoming interdependent with respect to the planned mobility of their undergraduate students. If a certain degree of autonomy in curricular matters is to be preserved, considerable attention must be given to the development of common policies or guidelines for transfer, to which the various colleges in each state will subscribe. Unless there is a high degree of articulation, it may become necessary to institute comprehensive college testing programs. The results of such tests might be used to decide which junior college students should transfer to what institutions, what kinds of credit they should receive, and when they are ready to graduate. If junior college students are to continue to transfer freely, with no loss of time in completing their degree programs, cooperation at the state level in developing guidelines is essential.

The various findings and conclusions might all be capsulated thusly: the junior colleges have made a fine record in preparing students to transfer to a very diverse group of four-year colleges and universities but improvement in the record is still possible. The Esso Foundation has provided one means of securing such improvement, by making it possible for a series of conferences to be held for the dual purpose of disseminating the research findings of the two studies and of developing and refining the guidelines for transfer which have been the major goal of the Joint Committee. Still it is believed that major benefits from both the research and the conferences will accrue only as continuing articulation activity is set in motion by the conferences, or is furthered by them where programs are already under way. It has been said that articulation is both a process and an attitude. Of the two, attitude is perhaps the more important for unless the parties involved undertake the solution of transfer problems in a context of interdependence and shared responsibility, obviously there will be no workable process.

Appendix Table 1

Analysis of Variance Tests of the Significance of Differences in Grade-Point Averages Earned by Students Who Transferred after Varying Amounts of Work in the Junior College

Type of Four-Year College	Source of Variance	Junior College Grade-Point Average					Grade-Point Average after Transfer				
		d.f.	Sum of Squares	Mean Square	F	P	d.f.	Sum of Squares	Mean Square	F	P
1	Between	2	3.1879	1.5940	7.67	.01	2	29.8135	14.9068	27.20	.01
	Within	1279	265.9549	.2079			1257	688.9935	.5481		
	Total	1281	269.1428				1259	718.8070			
2	Between	2	1.1813	.5906	2.63	n.s.	2	7.8033	3.9016	11.37	.01
	Within	480	107.9426	.2249			481	165.0141	.3431		
	Total	482	109.1239				483	172.8174			
3	Between	2	7.8202	3.9101	16.08	.01	2	8.5108	4.2554	9.88	.01
	Within	461	112.0639	.2431			455	195.9073	.4306		
	Total	463	119.8841				457	204.4181			
4	Between	2	5.4343	2.7172	6.42	.01	2	2.5974	1.2987	3.82	.05
	Within	227	96.0310	.4230			241	82.0241	.3403		
	Total	229	101.4653				243	84.6215			
5	Between	2	1.1148	.5574	2.52	n.s.	2	.6720	.3360	<1.00	n.s.
	Within	123	27.2626	.2216			120	71.3234	.5944		
	Total	125	28.3774				122	71.9954			
Total	Between	2	6.6712	3.3356	13.23	.01	2	50.1807	25.0904	52.96	.01
	Within	2582	6508.8195	.2521			2566	1215.9050	.4738		
	Total	2584	6515.4907				2568	1266.0857			